


Securing the Conservation of biodiversity across Administrative Levels and spatial, temporal, and Ecological Scales

Scale sensitivity and scale effectiveness of governance in biodiversity conservation

National regulatory model of biodiversity policy

GREECE

Authors: Evangelia Apostolopoulou, Konstantinos Touloumis & John D. Pantis

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Contents

List of commonly used acronyms

AUTH	Aristotle University of Thessaloniki
AEM	Agri-Environmental Measures
CAP	Common Agricultural Policy
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSC	Citizens Service Center
CSF	Community Support Framework
DA	Decentralized Authority
EC	European Commission
EEA	European Environment Agency
EEC	European Economic Community
EIA	Environmental Impact Assessments
EKBY	Greek Biotope/Wetland Centre
ES	Ecosystem Services
ETERPS	Special Fund for the Implementation of City Master Plans and Town Plans
EU	European Union
FDO	Forest District Office
FS	Forest Service
GDP	Gross Domestic Product
GI	Green Infrastructure
HNV	High Nature Value
IUCN	International Union for Conservation of Nature
JMD	Joint Ministerial Decision
MA	Management Agency
MEECC	Ministry of Environment, Energy and Climate Change
MRDF	Ministry of Rural Development and Food
MEPPW	Ministry of Environment, Planning and Public Works
NCESD	National Centre for Environment and Sustainable Development
NFP	National Focal Point
NGO	Non-Governmental Organization
NNEI	National Network of Environmental Information
NPM	New Public Management
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Co-operation and Development
OJG	Official Journal of the Government
PA	Protected Area
PASEGES	Pan-Hellenic Confederation of Unions of Agricultural Cooperatives
PD	Presidential Decree
RBD	River Basin District
SAC	Special Areas of Conservation
SCALES (project)	Securing the Conservation of biodiversity across Administrative Levels and spatial, temporal, and Ecological Scales.
SCI	Site of Community Importance
SEA	Strategic Environmental Assessment
SES	Specific Environmental Study
SPA	Special Protection Area
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
WFD	Water Framework Directive

1. Introduction

Greece is characterized as a biodiversity «hot spot» region by the European Environment Agency (EEA), with more that 1.500 endemic species and more than 70% habitat loss in historical times (EEA, 2007) hosting a notable biodiversity, while its flora and diversity in certain animal groups (e.g. birds, reptiles, terrestrial mollusks, isopods) is amongst the highest in Europe and the Mediterranean (e.g. Legakis et al., 2006; Strid and Tan, 1997; Strid, 2006)[1]. However, several human activities negatively affecting nature conservation in Greece have been recorded.

The project "Identification and description of habitat types in areas of interest for the conservation of nature, 1999-2001" (Greek Ministry for the Environment, Physical Planning and Public Works, MEPPW), has identified 164 human activities in national Natura 2000 sites, further classified in eight broad categories (Figure 1). The scientific analysis of these data has revealed that more than 66% of the total recorded human activities were reported as having a negative impact upon local biodiversity. In particular, agricultural and forestry activities were recognized as the most frequent negative activities in the sites of the Natura 2000 Network (66% of total, see Figure 1). Grazing was recognized as the main pressure among agricultural activities, recorded at the majority of the sites studied, while deliberate burning and natural fires were the second most frequent causes of disturbance for natural ecosystems. The negative effects of development, mainly reflected by tourist infrastructure and construction of roads and motorways, also occurred widely (15% of total, Figure 1).

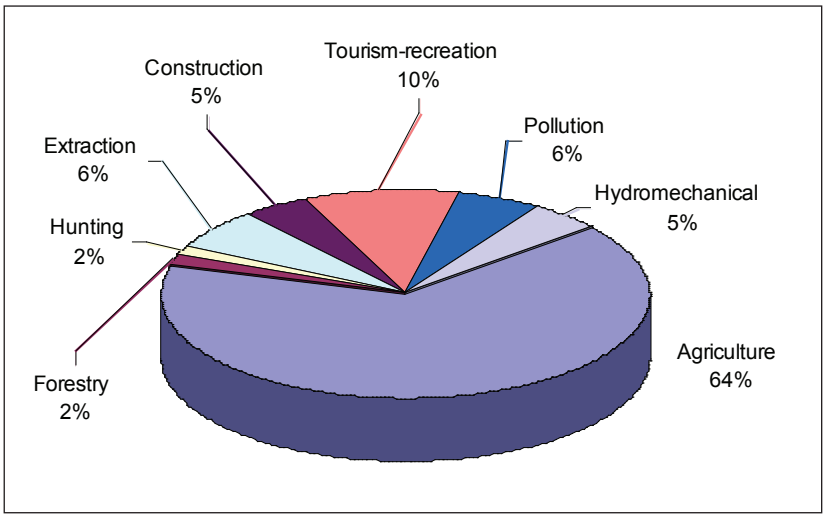


Figure 1. Human activities having a negative impact upon biodiversity in Natura 2000 sites in Greece.

These human activities are linked to the main drivers directly causing biodiversity loss in Greece. These drivers, according to the Greek Ministry of Environment, Planning and Public Works (MEPPW, 2009) and the report for the "State of the Environment 2008 in Greece" (National Centre for Environment and Sustainable Development, NCESD, 2008) could be summarized as follows:

1. Loss, degradation and fragmentation of habitats,
2. Non sustainable productive activities (e.g. agriculture, stock farming, forestry and fishing),
3. Environmental pollution (atmospheric pollution, water pollution and soil pollution),

1 For further details see http://www.eea.europa.eu/soer/countries/gr/soertopic_view?topic=biodiversity

4. Other factors, such as the spread of invasive alien species, changes in native species' dynamics, natural disasters -mainly fires and floods- and climate change.

Regarding agriculture, profound transformations, partly induced by the Common Agricultural Policy (CAP, set up in 1962), have taken place in agricultural practices in Europe over the last fifty years. In Greece, this has become evident during the last three decades through a significant intensification of agriculture in rural areas, and is strongly related to Greece's entry into the EU (in 1981) and the implementation of the CAP (NCESD, 2001). Mechanisation and intensification, increased use of fertilizers and pesticides, suboptimal use of natural resources, urbanization and abandonment of agricultural land have had a negative impact on the state of biodiversity (Dimopoulos et al., 2006). Specialisation of crop production, as a "par excellence" intensive farming practice, has seriously undermined species diversification and caused habitat loss. Higher amounts of inputs (over fertilization, excessive use of pesticides) present a predicament for Greece and other countries (Dimopoulos et al., 2006).

Additionally, development has had a direct effect on the natural environment by taking land and significantly affecting landscapes (see Figure 2). Infrastructure development has often led to habitat loss and fragmentation. Major examples of the impacts of development on Greek biodiversity are the large-scale public works since the 90's, building work for the 2004 Olympic games in Athens, and the increase in commercial and industrial areas (shopping centres, military bases, train and ship yards, airports) especially near big cities.

Even though most research related to biodiversity loss focuses on direct drivers, such as land use change, effective management requires more attention to indirect drivers such as demographic, economic, sociopolitical and cultural factors (Carpenter et al., 2006). However, excluding indirect drivers from the direct-drivers classification is difficult because the line between the two is often unclear, and situation-dependent (Salafsky et al., 2008).

The most important indirect drivers in Greece are related to the major changes in Greek economy expressed in development and planning policies that emerged almost in parallel with the institutional changes in conservation policies. Major public works since the 90's, planning changes concerning further urban development in the capital and anti-environmental constitutional revisions revealed accelerating development trends and expectations of investment growth (Beutel, 2002). Thus, despite rhetorical commitments to sustainability, the development of the Greek economy has been fostered by state policies promoting urbanization, destruction of open places and forests, depletion of agricultural populations, incursion of capitalist relationships into rural areas, exploitation of coastal areas for mass tourism, and, in general, environmental degradation (Totsikas, 2004). Moreover, several socio-political factors have created significant problems in conservation law enforcement. These are mainly related to vested interests and powerful actors hostile to restrictions on their economic activities. The connection between these interests and the state, and more generally the close relationship between industrial interests and Greek governments (see Pridham et al., 1995) is evidenced, inter alia, by the chronic lack of coherent conservation policy. In this context, essential work related to the environmental provisions for major constructions remains unimplemented whereas in many Protected Areas (PAs) arbitrary and extensive building, landfills, deforestation, uncontrolled drilling, land speculation and forest violation continue uncontrolled.

The virtual abandonment of protection measures, combined with state policies and public discourse on rural development being locked into the notion that land is valueless unless used for building and tourist infrastructure (see also Nygren, 2000), have also often made local communities unwilling to comply with conservation restrictions.

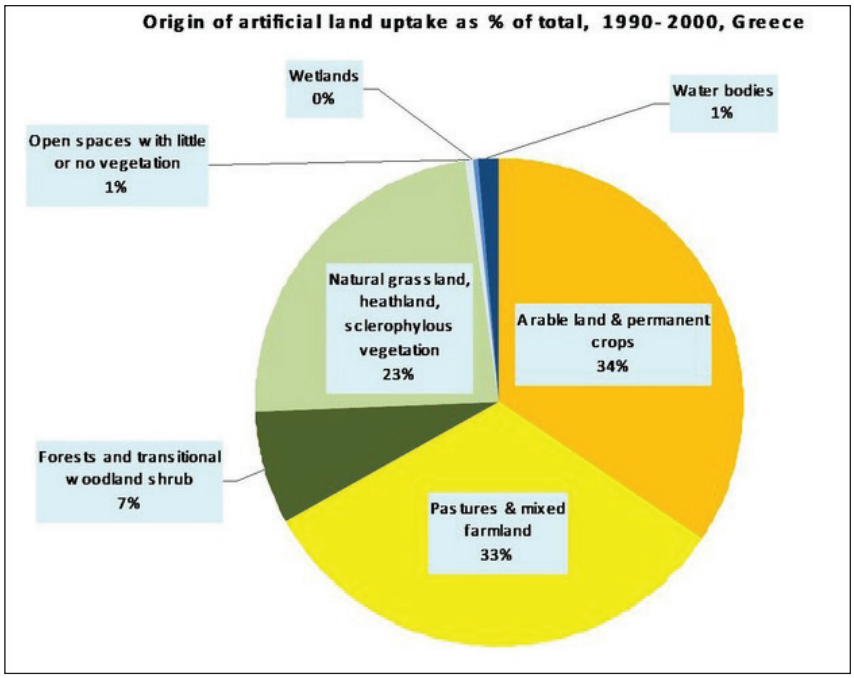


Figure 2. Relative contribution of land-cover categories in Greece taken by urban and other artificial land development, 1990-2000. Source: http://www.eea.europa.eu/soer/countries/gr/soertopic_view?topic=biodiversity.

In this report we explore the development of the Greek regulatory regime of biodiversity conservation by focusing mainly on PAs, the main policy instrument adopted in Greece to deal with drivers causing biodiversity loss. We explore the governance developments and challenges during the last 20 years from the perspectives of administrative resources, nature conservation instruments, site selection, management, integrative conservation and monitoring. We also present key findings regarding stakeholders' perceptions on the main scale-related challenges of Greek biodiversity governance.

2. Materials and Methods

A qualitative research methodology was used to achieve a better understanding of conservation problems, dynamics and scale-related challenges. In particular, we organized four focus groups, fourteen individual interviews and an expert round table to gather information from a variety of stakeholders having different roles in biodiversity governance. In addition, we carried out an extensive document analysis. The main method of data analysis has been content analysis. The material and methods used are described in detail in the following sub-sections.

2.1. Focus groups

We organized four focus groups (for a detailed description of focus groups methodology see Barbour and Kitzinger, 1999). We used purposive sampling when selecting the participants, i.e. we chose key groups (groups that we considered relevant) and included key stakeholders that might have different views on the subject under discussion. The criteria for stakeholders selection included the following: (i) vertical dimension, (ii) horizontal dimension, (iii) hierarchical levels, (iv) participation level (see also Apostolopoulou and Paloniemi, 2012; Elbakidze et al., 2010). Therefore, we included representatives from the national level, such as ministries (Ministry of Environment, Energy and Climate Change - MEECC, Ministry of Rural Development and Food - MRDF) and national level organizations with important role for biodiversity conservation (e.g. Committee Nature 2000), from NGOs acting at all levels, from the regional level administration (representatives of Attica, Central Greece and Central Macedonia Regions), from the local level such as local level administration (representatives of municipalities) and local community organizations (local NGOs, networks of citizens, volunteers), and also multilevel organizations (e.g. management agencies). Representatives from local and regional levels came from the same jurisdictions. In particular, the specific composition of the four focus groups was as follows:

i. "Scale" and Scales of Biodiversity Conservation (Friday 11.02.2011).

Participants were experts either in the theoretical issues of scales or/and the empirical aspects of scales of biodiversity conservation. Five scientists participated with backgrounds either in natural or/and social sciences. They came from universities and research institutes. The institutions represented were: University of the Aegean (Department of the Environment), Agricultural University of Athens, Harokopion University of Athens (Department of Geography), and National Centre of Social Research (2 participants from the Environmental Group of the Centre). In addition, four researchers from AUTH facilitated, documented and participated in the discussion.

ii. Scales and Biodiversity Conservation of Forestry and Agricultural landscape (Saturday 12.02.2011).

Discussion in the focus group focused on scales issues in biodiversity conservation at forest and agricultural landscapes. Participants act at local, regional and/or national levels of forestry and agricultural administrative sectors. Altogether seven stakeholders participated representing the: Ministry of Rural Development and Food (MRDF, former Ministry of Agriculture), National Committee Nature 2000, Management agency (MA) of Parnassos National Forest (institute managing PAs), Regional Agency of Sterea Ellada, Municipality, National NGO, Local/Regional NGO. In addition, four researchers from AUTH facilitated, documented and participated in the discussion.

iii. Scales and Biodiversity Conservation (Sunday 13.02.2011).

Discussion in the focus group focused on scales issues in biodiversity conservation. Participants act at local, regional and/or national levels of environmental administration. Altogether eight stakeholders participated representing the: MEECC, MA of Parnitha National Forest, Regional environmental administration (Forest Distinct Office, FDO), Local NGO (2 participants), Regional NGO, and Forest Research Institute (2 participants), a partner of Parnitha MA involved in the management of the National Forest. In addition, four researchers from AUTH facilitated, documented and participated in the discussion.

iv. Scales and Biodiversity Conservation (Monday 28.03.2011).

Discussion in the focus group focused on scales issues in biodiversity conservation at the lake ecosystem and surrounding (mainly agricultural) landscape. Participants act at local, regional and/or national levels of environmental administrative sectors. Altogether six stakeholders participated representing the: MA of Koroneia-Volvi Lakes: 2 participants (the president and one employee), National NGO, Region of Central Macedonia, Municipality (vice-mayor of the environment) and Geotechnical Chamber of Greece. In addition, three researchers from AUTH facilitated and documented the discussions that were all recorded.

We should mention that an introductory document was sent to the participants of the focus group discussions prior to the meetings. A common document (with different language versions) was used in Finland and in Greece as well as a similar composition for the focus groups (for a detailed description of focus groups participants see Table 1 and Apostolopoulou and Paloniemi, 2012).

Table 1. Research participants in the focus groups discussions in Greece.

Stakeholders participating in biodiversity governance
State actors
Ministry for the Environment, Energy and Climate Change
Ministry of Rural Development and Food
Committee Nature 2000
Geotechnical Chamber of Greece
Region of Attica
Region of Central Greece (Sterea Ellada)
Region of Central Macedonia
Forest distinct offices
Municipalities (local administrative level)
Regional Forestry Agency
Regional Environmental Administrations
NGOs
National NGOs for Nature Conservation
Regional NGOs for Nature Conservation
Local NGOs for Nature Conservation
Organizations with Multilevel Composition
Management agency of Koroneia-Volvi Lakes
Management agency of Parnassos National Forest
Management agency of Parnitha National Forest
Other key, non-state actors
Citizen Networks
Organizations of Volunteers
Scientific community
Aristotle University of Thessaloniki (Department of Biology)
University of the Aegean (Department of the Environment)
National Centre of Social Research
Agricultural University of Athens
Harokopion University of Athens (Department of Geography)
Forest Research Institute
Total number of participants: 29

We organized the focus groups discussions around the following three main themes:

(1) open and more general questions on scale-related issues,
(2) questions on current policies and instruments (such as Natura 2000 network), and
(3) questions on emerging or future policies.

2.2. Interviews

Ten semi-structured interviews were conducted in order to ascertain information on the Greek regulatory regime for nature conservation with the following stakeholders: 2 consultants of the Minister of EECC, 1 employee from the MEECC, 2 employees from the MRDF, 3 experts from the university, an NGO representative and a president of a MA. All interviews were recorded and transcribed.

Additionally, four semi-structured interviews were conducted to elicit information about the practice of biodiversity monitoring in Greece with the following people: an expert from the MEECC, two NGO representatives and a scientist responsible for monitoring in Greece and vice-president of a national committee named “Committee Nature 2000” which is an institutionalized advisory body of the Minister of Environment and Climate Change for all scientifically-based decisions regarding nature conservation. All interviews were recorded and transcribed.

2.3. Desk study and Literature review

Desk study and literature review included studying and analyzing all relevant archival material, such as Greek and European laws, environmental studies, publications by NGOs, ministries, press articles, internet resources as well as scientific publications. It also included the meta-analysis of previous data collected by the authors in the context of other research projects and in particular the meta-analysis of 91 semi-structured interviews with various stakeholders participating in biodiversity governance in Greece (see Apostolopoulou and Pantis, 2009).

It is important to notice that in Greece there is a general lack of data regarding environmental policy and nature conservation, both at national level and at EU levels (e.g. in many reports published from the EEA data for Greece are missing). Thus in many cases we were unable to find detailed information about specific issues such as, for example, regarding the number of employees working in nature administration or the specific funds for nature conservation.

2.4. Expert round table

An expert round table was organised in order to analyse environmental policies in Greece including three researchers involved in SCALES project. The round table lasted for two hours and the analysis was continued into more details after the preliminary work.

3. Key trends in the regulatory environment over the last 20 years

3.1. Administration

Development in the environmental sector in Greece has not followed the general line of public administration development. In particular, there is a general tendency[1] for "more state" and increased state institutions in specific sections (for example in the case of security or defense) and for "less state" in more socially based services such as education or health, including the environmental sector. It is characteristic that in Greece there are 68.000 employees in the security forces, whereas, for example, Great Britain, with a sixfold greater population, has in the same positions 212.000 employees, and Sweden with a comparable population to Greece, but fivefold greater land area, has 23.000 employees. Another characteristic example is that in the early '90s the MEPPW was divided into 88 directorates of which 54 were related to public works, 32 to physical planning and only 2 covered the environment occupying only 290 out of 3.354 civil servants (Pridham et al., 1995). At the same time, initiatives for development in the environment sector have often proved to be superficial and thus often remained unsupported and even unactivated (for example, The NCESD which has been understaffed since its establishment in 2001, or the Committee Nature 2000 which was defunct almost for a decade and only started operating again in the last three years).

In analysing Greek nature administration, core distinctions can be made between three periods: Firstly, the period from the establishment of the first PAs (1938) until 1985. During this period the main responsibility for conservation policies lay with the MRDF (until 2004 named Ministry of Agriculture) at national level and with the Forest Service (FS) and Forest District Offices (FDOs, government body funded by the Ministry of Agriculture) at regional and local levels.

Secondly, in 1986 the main responsibility for nature conservation was shifted to the newly established MEPPW, and until 2009 nature administration mainly consisted of the MEPPW and the MRDF. The administration of the MEPPW consisted of the General Directorate of the Environment, the Division of Environmental Planning, the Division of Atmosphere and Noise, and the Division of Physical Planning. Thus, the ministry's jurisdictions comprised both environmental and physical planning, including planning with regard to the conservation of habitats and species, establishment and management of PAs, Environmental Impact Assessments (EIA), and the majority of issues related to environmental protection and awareness. However, as mentioned above, the environmental section of the ministry was a small part of the overall organizational structure whereas the MEPPW has been overstaffed with civil engineers and architects and has lacked environmental experts. In particular, the primary responsibility for conservation policy rested with only one department of the MEPPW, specifically with the Department of Natural Environment Management. Regarding the MRDF, its jurisdictions included the management of National Forest Parks and generally all forested areas, the protection of species, the management of fishing, hunting, forestry and agriculture, genetic resources and ex situ conservation of plants and farm animals. It was also the National Focal Point (NFP) of CITES. It has to be noted that although the main responsibility for nature conservation was moved to the MEPPW, executive powers as well as management of PAs (forest ecosystems) established before 1986 remained within the FDOs at local level until the establishment of the first Management Agencies - MAs in 2002.

1 This tendency reflects the increasing adoption of neoliberal policies in Greece and has been especially evident in the period following the financial "crash" of 2008.

MAs must consist of an advisory board of representatives of central ministries, regional, prefectural and local authorities, local stakeholders, NGOs and scientists, whereas advisory boards must be supported by scientific, technical and administrational personnel (Law 2742/1999; about MAs see also section 5.2.).

It is important to notice that Greek nature conservation administration has been characterized by a highly centralized and hierarchically organized central authority. It is indicative that the Greek state has been considered as one of the most centralized and interventionist states in the EU with a significant resistance to decentralization (see Verney and Papageorgiou, 1993; Ioakimidis, 1998). During the '80s, a process of building decentralized structures was initiated in Greece resulting in three main levels of sub-national government: the regions (NUTS II), the prefectures (NUTS III) and the municipalities. Moreover, in the late '80s local governments obtained the ability to establish municipal enterprises involving public and private actors something which led to a significant increase in the cooperation between private and public sectors and in "civil society" partnerships. This has been especially apparent during the '90s in the increasing privatization of public services, the increasing strength of the power of private interests and lobbies, and the significant increase in the number of environmental NGOs (for more details regarding NGOs in Greece see Botetzagias and Boudourides, 2004).

Thirdly, after the national elections on October 2009 the MEPPW has been renamed as MEECC, and for the first time an independent Ministry of the Environment has been established in Greece. In this context, the National Forest Directorate has been transferred from the MRDF to the new MEECC[2]. However, as interviewees argued, environment and forestry still consist of two different departments and at lower regional and local (municipal) levels often remain two distinct entities. The administration of the new MEECC consists of the General Directorate of the Environment, the General Directorate of Energy, the General Directorate of Development, Forest Protection and Natural Environment, the General Directorate of Natural Wealth, the General Directorate of Urban Planning and three more general directorates as well as several services and departments. Additionally, the ministry is divided in 5 secretariats: (i) the General Secretariat for Energy and Climate Change, (ii) the General Secretariat for Regional Planning and Urban Development, (iii) the Special Secretariat for Water, (iv) the Special Secretariat for the Environment and Energy Inspectorate and (v) the Special Secretariat for Forests[3]. MEECC is also the NFP of the Convention of Biological Diversity, the Bern Convention, the Barcelona Convention, and the RAMSAR Convention.

These changes have been coincided with significant changes in public sector administration including environmental administrations. In particular, during the last decade, one of the main ideas guiding the development in public sector administration has been the New Public Management (NPM). NPM refers to a combination of various interconnected reform policies, which, taken altogether, generate an administrative political doctrine underlining professional management and high degree of discretionary power together with decentralization of managerial authority (see OECD, 2010). The rise of NPM has emerged in parallel with a strengthening of neoliberal political thinking in developed countries (Temmer, 1998; Salm-

2 Other significant changes included the transfer of the General Directorates of Energy, Natural Wealth and Administrative Support (the latter including both national and regional administrative levels) from the former Ministry of Development to the Ministry of the Environment (these Directorates formed the new General Secretariat for Energy and Climate Change), the transfer of the Special Secretariat of International Energy Policy as well as the transfer of the General Secretariat for Public Works from the Ministry of Environment to the Ministry of Infrastructure, Transport and Networks.

3 For more information see http://www.ypeka.gr/Default.aspx?tabid=545&language=en-US.

inen, 2003). The reasons for the reform in Greece, as described in the official website of "Kallikratis" program (http://kallikratis.ypes.gr/) and the relevant legislation (Law 3852/2010), have been to replace a bureaucratic organizational culture with new practices aimed at more effective and more "flexible" ways of managing public services (see also Salminen, 2003) and has coincided with the further shrinking of Greek welfare state. These trends have carried the labels of network governance, stakeholder participation and deliberative democracy (Hajer and Wagenaar, 2003; Rhodes, 2007; Primmer and Kyllönen, 2006) and have been closely related to the adoption of market-based approaches and neoliberal policies.

These reforms have resulted in a wide ranging reorganization of all governance levels (http://kallikratis.ypes.gr/). In particular, significant changes included the consolidation of the existent municipalities as well as the abolition of the prefectures and the transfer of their authority and powers to 325 larger new municipalities, 13 regions (with elected heads of region) and seven newly established (unelected) decentralized administrations, each consisting of 1 to 3 regions (Greek law 3852/2010; for the main changes in regional and local administration the last decades see Figures 3 and 4).

The new Regions are considered to be the main "vehicles" of green development as stated in the official website of the Kallikratis Program. In practice, regarding environmental administration the new situation is as follows: the 13 Regions have an equal number of General Secretariats of Region for the purpose of planning and coordinating regional development. These Regions, along with the 7 Decentralized Authorities, belong administratively to the Ministry of Interior Decentralization and E-government. Each region includes a number of former Prefectures and is headed by a Regional General Secretary. Within each General Secretariat there is a Directorate of the Environment and Spatial Planning functions acting as a regional inter-prefectural service of the MEECC. Local authorities (known as local self-government organizations or "OTA" and recently renamed as "Local Government") are in charge of "local affairs". Environmental issues are divided between the Regions and the Decentralized Authorities. It is important to notice that FDOs now belong to the new Decentralized Authorities (at least organizationally because thematically they are directly related to the General Directorate of Development, Forest Protection and Natural Environment of the MEECC) as well as many processes concerning environmental permits and land/natural resource management. For the previous structure of nature administration see Figure 5a (see also Pediaditi, 2010) and for the current structure see Figure 5b.

Until now, cross-level and cross-sector integration and coordination remains an important scale-related challenge for Greek biodiversity governance. To add to the complexity described above, there are many (other) state bodies in Greece related to biodiversity issues, leading to a situation in which almost every ministry incorporates an environmental division and it is involved in several co-decision making procedures. Overall, the administrative structure in Greece is quite complex and there are several institutions with overlapping jurisdictions and responsibilities. The result is a considerable fragmentation of environmental responsibilities along sectoral lines, reflecting a chronic more general tradition of intense compartmentalisation in Greek public administration (Pridham et al., 1995). Moreover, the frequent changes in the organization of public administration at all levels render the continuity in policy extremely difficult. This results in the latter being primarily based on the "memory" of state employees, as interviewees frequently remarked. Overall, the scale of development of public environmental protection and conservation administration, and in particular, the stability in the number and qualification of permanent employees, are incommensurate with

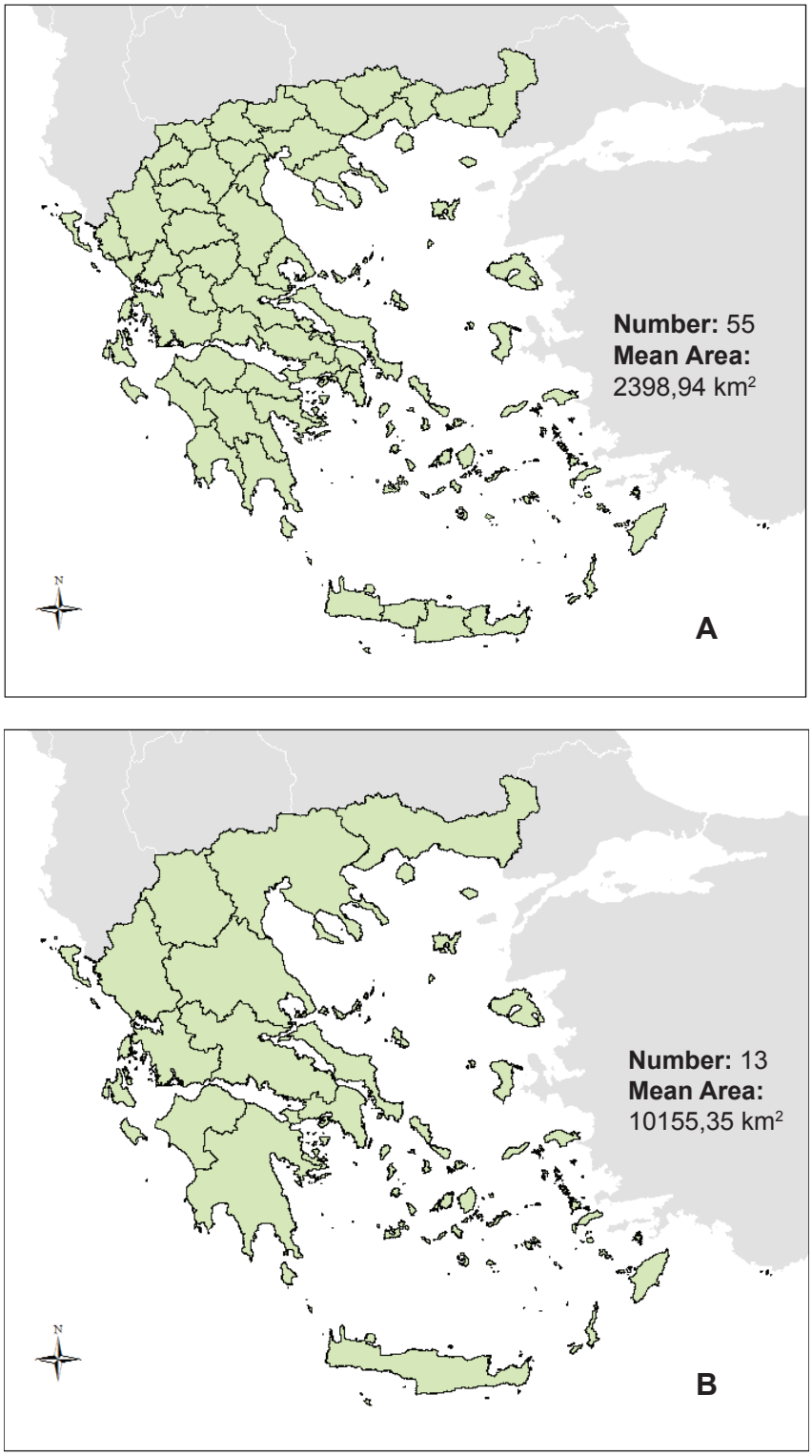


Figure 3. Division of regional administration units in Greece. A: Until 2010 (Prefectures), B: Since 2011 (Regions).

the increasing responsibilities of the country in terms of conservation policy. Most importantly, the changes in the composition of the ministries as well as in the regional and local administration pose significant scale challenges regarding the integration of policies and the cooperation of actors across governance levels, something extensively discussed during focus groups. It is indicative that many of the new Regions and Decentralized Authorities are still understaffed and there is considerable confusion regarding their responsibilities after the recent governance reforms.

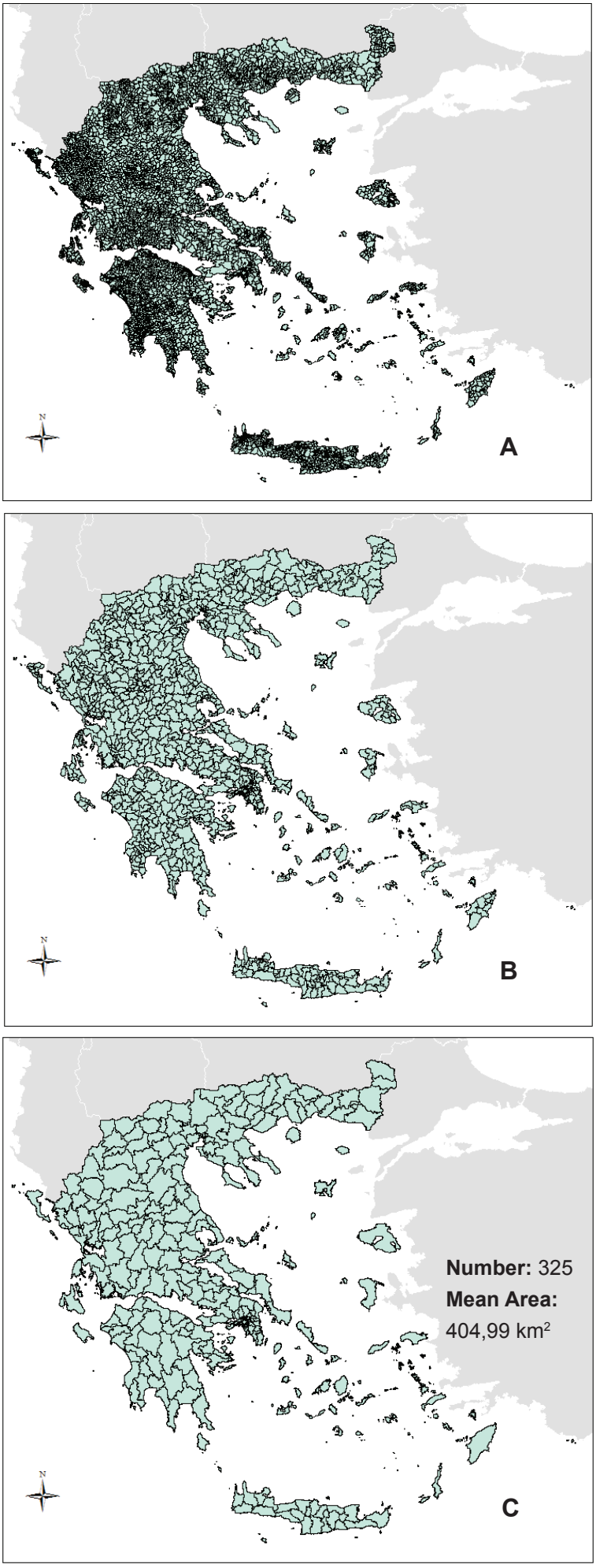
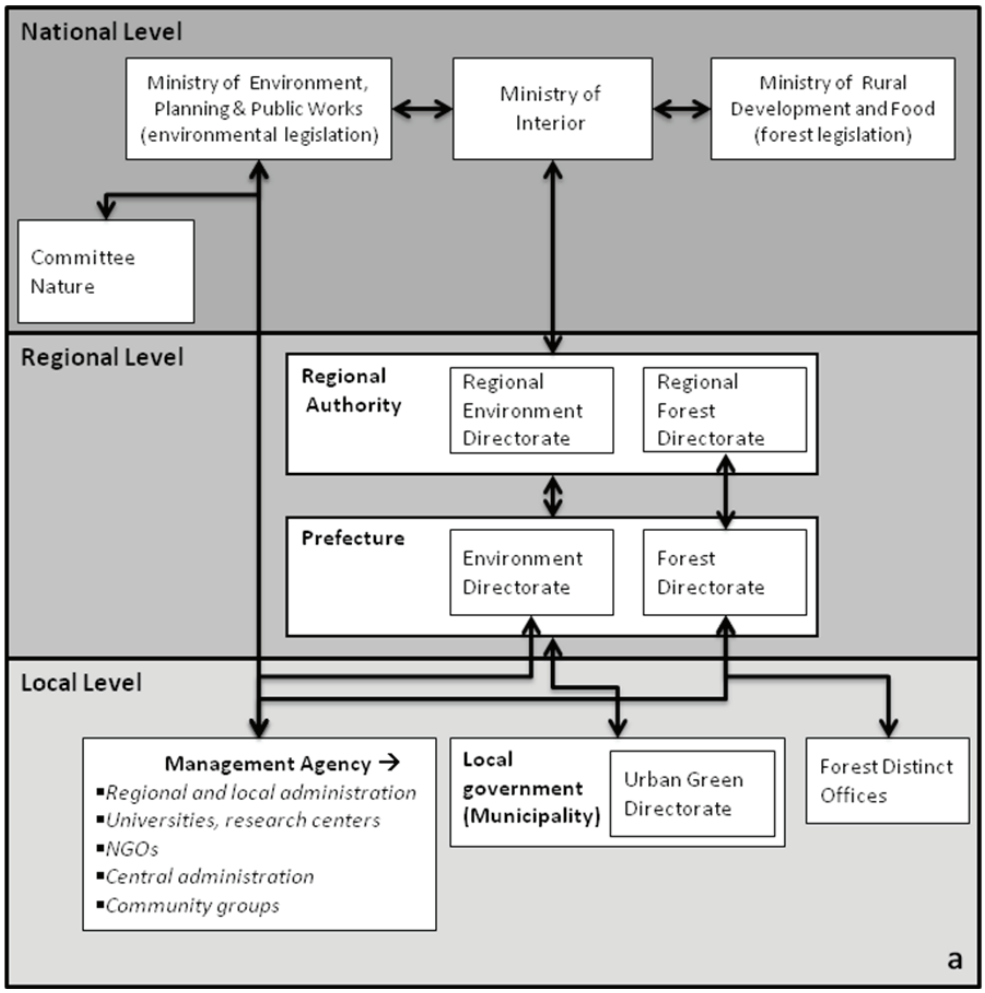


Figure 4. Division of local administration units in Greece.
A: Until 1997 (municipalities and communities),
B: Between 1997 and 2010,
C: Since 2011 (only municipalities).



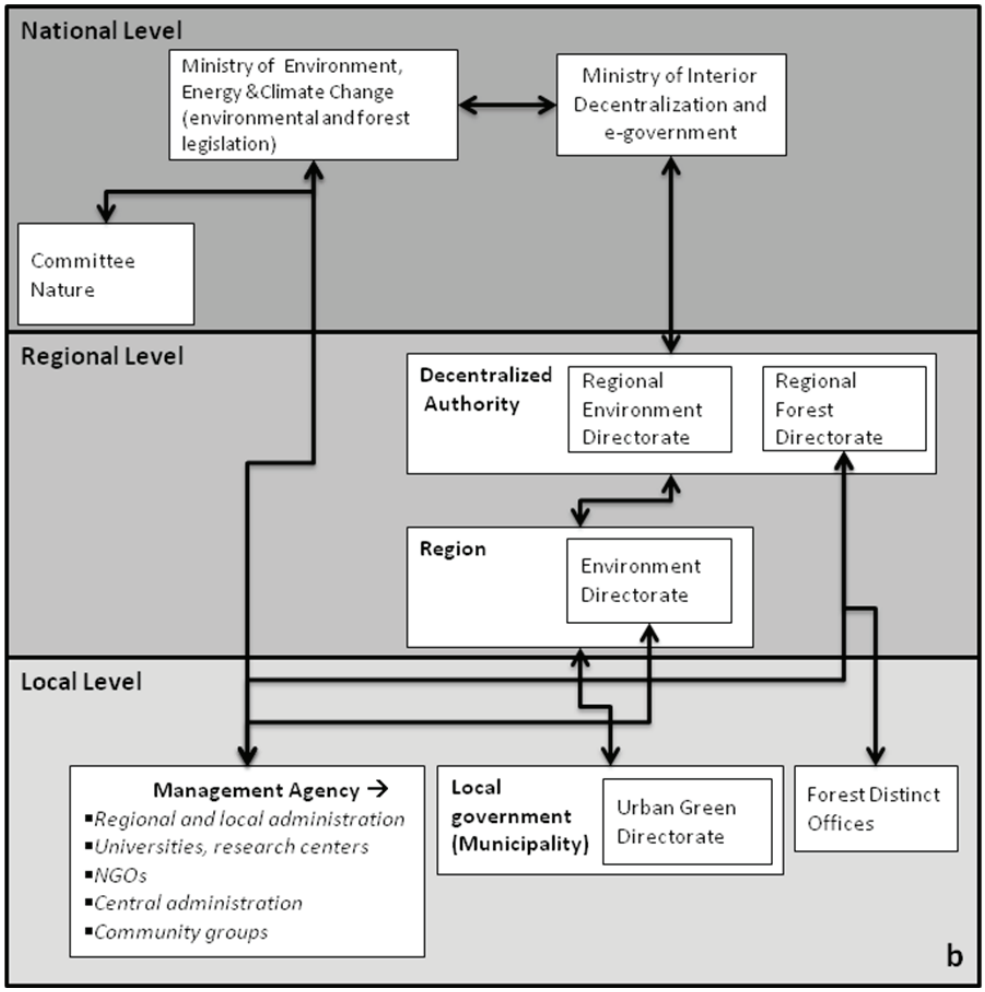


Figure 5. Biodiversity governance structure in Greece. 5a. Until 2009. The MRDF has the authority for the forest PAs while the MEPPW has the authority for other types of PAs. 5b. After 2009. Regional forest directorate has the authority for the forests while Regions' Environmental Directorates have the authority for other types of PAs.

3.2. Funding[4]

As far as the allocation of state funds goes, the only national resource for environmental projects has been the Special Fund for the Implementation of City Master Plans and Town Plans (ETERPS), which, since 1994, has been divided into the "Green Fund" and the "Blue Fund". In the absence of officially published data accessible to the public specifying the total amount of money allocated to this Fund and the ways that it has been disbursed for environmental projects, the only available information is that, according to the national budget for the previous five years[5], there has been an increase in funds allocated to the Special Fund, but no specific information about distribution. However, by comparing the allocations of national budget in the last 5 years, it also becomes evident that the money devoted to the MEECC, and especially the environmental departments, are much less than to the other ministries (see http://www.mnec.gr/el/economics/budgets/) revealing the fact that the political priority of the environment is strictly limited both within the ministry and with the government structure as a whole.

The main source of funding for nature conservation for both state and non-state actors comes from the EU, and in particular from the Community Support Frameworks (CSF) and from LIFE-Nature Projects. The general trend over the last ten years has been for an increase of the funds allocated to private actors. Furthermore, Greek NGOs, universities and research centres have taken the initiative to implement several intervention schemes funded from LIFE-Nature projects and local authorities and universities have made a significant contribution to the implementation of plans in the context of LIFE-Environment projects (Table 2). 33.5% of LIFE-Nature projects (21.6 million euros) were targeted at four species of national importance: the *Ursus Arctus (6.6 million euros)*, *Carretta Caretta (6.8 million euros)*, *Monachus Monachus* (4.4 million euros) and *Gypaetus Barbatus (3.8 million euros)*, although from the resulting 80 studies, only two were integrated into public legislation and policy (National Park of Pindos and Sporades Marine Park). It has to be noted that after completion of the LIFE-Nature projects there was no follow up nor did the competent authorities ensure monitoring. LIFE projects have been considered significant for Greece given that there was no other funding source directly targeting the implementation of legislation for the conservation of habitats and species (Valaora and Dimalexis, 2007).

A major question in Greece is whether all the funded actions are connected and, whether the MEECC takes the necessary measures to ensure that actions are based on a long-term strategy. So far, the majority of funded actions are fragmented and temporary and they are terminated as soon as the programme's financial resources are exhausted. The most typical example is the information centres established in approximately 40 Greek PAs during 1996 and 1999 (in the context of the 2nd CSF), today most lie in ruins.

Table 2. Overview of LIFE projects from 1996 to 2006 in Greece[1].

	Number of projects	Total LIFE contribution (million EUR)	Main themes covered	Average LIFE contribution per project (million EUR)	Average project duration (years)
Environment	64	36.4	Strategic approaches (30%) Natural resources and waste (23%)	0.6	3.5
Nature	34	31.6	Habitats (67.7%)	0.9	4.1

[1] For further details see http://ec.europa.eu/environment/life/countries/greece.html and also Valaora and Dimalexis, 2007.

4 See also Appendix 3.

5 This refers to the period before the current economic crisis. After 2009 there have been increasing cuts in both conservation funding and personnel.

It is important to mention here that, in the context of the 3rd CSF, conservation actions for PAs have been mainly linked with the Operational Program "Environment" (EPPER) of the MEPPW. The areas without management agencies (the majority of Natura 2000 sites in Greece) did not fulfill the criteria for funding from the EPPER (NGOs, 2005). But even the areas with management agencies faced serious problems mainly because the majority of their advisory boards were replaced one or two years after establishment, causing delays in authorizing official operational regulations, restricting hiring permanent personnel and thus eligibility for funding from the 3rd CSF. The national estimations for the funding needs of managing Natura 2000 sites (article 8 of Habitats directive) were 2.021.500.000 € for the period 2003-2012. Despite this, the Operational Program "Environment" has offered only 54.880.000 € for the period 2003-2006.

We should, however, emphasize that the limited funds for conservation are a general trend in the EU, not only in Greece. It is characteristic that the 3rd CSF funds for the conservation of natural environment are less than the 2% of its total whereas the general allocation of funds follows the trends of previous CSF focusing on large infrastructure projects (see Beutel, 2002; see also Table 3 for general trends).

Table 3. Total general government expenditure on environmental protection, housing and community amenities, 2005-2009. (% of GDP (Gross Domestic Product) and millions of euro in 2009, Source: EUROSTAT, http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=gov_a_exp&lang=en)

Government expenditure on environmental protection and housing

Government spending on 'environmental protection' and 'housing and community amenities' together amounted to 1.9% of EU-27 GDP in 2009, showing a slight increase in relative terms compared to previous years.

These functions include on the one hand waste management, pollution abatement, protection of biodiversity and landscape, and on the other hand, all outlays relating to housing development, community development, water supply and street lighting.

Of the ten COFOG first-level functions, these two divisions are often the least significant from the point of view of government expenditure in countries.

Cyprus, Ireland and France recorded the largest values under these functions combined (3.5%, 3.4% and 3.0% respectively of GDP) in 2009, followed by Bulgaria and the UK (both 2.6% of GDP). The lowest percentages were found in Switzerland, Belgium and Finland (less than 1% of GDP).

Total general government expenditure on environmental protection, housing and community amenities, 2005-2009 (% of GDP and millions of euro in 2009)

	Expenditure in % of GDP					Expenditure in millions of euro
	2005	2006	2007	2008	2009	2009
EU27	1.8	1.7	1.7	1.7	1.9	231634.3
EA17	1.8	1.7	1.7	1.7	1.9	171343.9
BE	1.1	1.0	1.0	1.0	0.9	3165.7
BG	1.4	1.8	2.7	2.2	2.6	892.1
CZ	2.8	2.8	2.1	2.1	1.9	2655.9
DK	1.2	1.0	1.1	1.0	1.1	2468.1
DE	1.5	1.4	1.2	1.1	1.4	33390.0
EE	1.1	0.8	1.5	1.7	1.1	153.7
IE	2.4	2.6	3.3	3.2	3.4	5421.0
EL	0.9	0.9	0.9	0.9	1.1	2426.0
ES	1.8	1.7	1.8	2.0	2.2	22872.0
FR	2.6	2.8	2.8	2.7	3.0	55627.0
IT	1.6	1.5	1.5	1.6	1.7	26701.0
CY	2.8	2.8	3.1	3.2	3.5	601.0
LV	2.0	2.2	2.2	2.2	2.0	362.8
LT	0.9	1.1	1.2	1.3	1.7	442.8

	Expenditure in % of GDP					Expenditure in millions of euro
	2005	2006	2007	2008	2009	2009
LU	1.8	1.6	1.5	1.6	1.9	719.8
HU	1.5	1.8	1.7	1.8	1.9	1712.5
MT	2.2	2.3	2.2	2.3	2.1	120.4
NL	2	1.8	1.8	1.8	2	11413.0
AT	1.1	1.1	1.1	1	1.2	3419.7
PL	2.1	1.9	1.8	1.8	1.9	5722.6
PT	1.2	1.4	1.3	1.4	1.3	2272.2
RO	1.9	1.9	1.9	1.8	2	2334.7
SI	1.3	1.4	1.4	1.7	1.8	636.1
SK	1.5	1.4	1.4	1.3	1.5	907.3
FI	0.6	0.6	0.6	0.7	0.9	1498.0
SE	1.2	1.1	1.1	1.1	1.2	3365.3
UK	1.7	2	2.1	2.1	2.6	40333.8
IS	1.1	1.3	1.1	1.2	1.2	101.4
NO	1.2	1.2	1.2	1.2	1.4	3713.7
CH	:	:	0.8	0.7	0.7	2682.8

Recently, a new national law (Law 3889) for funding environmental interventions was promulgated (in 2010). With this law a special, integrated funding system for environmental interventions has been established with the goal of transparently managing funds for environmental protection, restoration and climate change mitigation. This law also included the establishment of the "Green Fund" which replaces the Special Fund for the Implementation of City Master Plans and Town Plans (ETERPS). Even if the relevant law does not clearly define the envi-

ronmental purpose and specific goals of the Green Fund, its establishment has been considered as a positive step forward by Greek environmental NGOs (e.g., WWF, 2011). However, recently there has been an amendment to the law regarding the Green Fund, in the context of implementing the "Memorandum of Economic and Financial Policy"[6]. Specifically, it was decided (laws 4024/2011 and 4011/2013) that the 97.5% of the funds coming from environmental regulations will be transferred to the main state budget and only 2.5% of funds could be used for environmental actions (see also Apostolopoulou and Adams, in press).

3.3. Conserving nature

The first two Greek PAs were designated in 1938 (national forests of Olympus and Parnassus), under Greek law 856/37, which was created by the dictatorship of Ioannis Metaxas (1936-1940). This legislation proposed the designation of extensive mountainous-forested areas as national parks including two main protection zones: the core that is under strict protection and the periphery or the buffer zone. Seven parks have been established between 1937 and 1966 covering 18.600 ha of public land (Papageorgiou and Vogiatzakis, 2006).

A proliferation of PAs came thirty-three years later, with law 996/1971, but this was again a law created by a dictatorship, this time of Georgios Papadopoulos (1967-1974). By 1974, there had been 10 national parks established, covering 0.56% of the total land area of Greece (Papageorgiou and Vogiatzakis, 2006). The institutional framework of nature conservation was primarily based on forest legislation and there was no clear reference to the term "biodiversity". However, it is the evolution of forest legislation according to European and international policy developments that resulted in the emergence of the concept of biodiversity conservation. This period has been characterized by the concept of "untouched wilderness" thus policies were mainly based on protecting emblematic species by excluding human activities and public access.

Since 1985, with the incorporation of the Directive 79/409 (Birds Directive) into national law following Greece's entry into the EU (in 1/1/1981) and the environmental law 1650 (launched in 1986) the concept of "untouched wilderness" has been replaced with that of "supervised human activity"[7]. Law 1650 has determined five categories of PAs as well as the arrangements for their designation and management. For the regulation of human activities in PAs, law 1650 required an Environmental Impact Assessment (EIA) for projects located in natural areas and a Specific Environmental Study (SES) for site selection and designation. Although this law was a step forward, it has been criticized for lack of public involvement and minimal implementation (IUCN, 1991) and has been characterized as the product of an institutional obligation to harmonize Greek national environmental legislation with European law (Troumbis, 1995). It is indicative that law 1650, and especially its provisions for the establishment of management agencies, remained almost dormant and unimplemented for more than a decade until the designation of the MA of the National Marine Park of Zakynthos under EU pressure (Pantis, 2007). During this period, the management of PAs remained in the hands of local administrations and security forces, or, in the case of forest areas, with the FDOs (see Nantsou, 2007, p. 338).

6 http://www.minfin.gr/content-api/f/binaryChannel/minfin/datastore/d1/d9/7c/d1d97cb60bad8706a2cabbf83e5ae9fb7f3ab369/application/pdf/MOU+_+MEFP+13+march+2012%5B1%5D.pdf

7 Another significant institutional development of that period was the Presidential Decree 67/1981 for the protection of a specific catalogue of fauna and flora species.

In 1998, the belated harmonization of Directive 92/43 (Habitats directive) into Greek legislation linked the establishment of the Natura 2000 network with law 1650/86, and more powers have been vested in the MEPPW. However, since 1985, when the Ministry for the Environment, Physical Planning and Public Works (MEPPW) was established, there has been a dual authority and divided responsibility for the conservation and management of Greek natural areas between this ministry and the MRDF. This dual authority has been reflected in the coexistence of the forest (L.D. 86/1969 and L.D. 996/1971) and environmental legislation (law 1650/86) for the designation of PAs, as well as in the several overlapping responsibilities between management agencies (see below) and FDOs.

The number of PAs in Greece has significantly increased during the last decades (Figure 6). This can be mainly attributed to EU directives, and especially to the Habitats and Birds directives that form the legal basis of the Natura 2000 Network of protected sites. It is characteristic that in 1995 there were approximately 65 Greek PAs, whereas today there are more

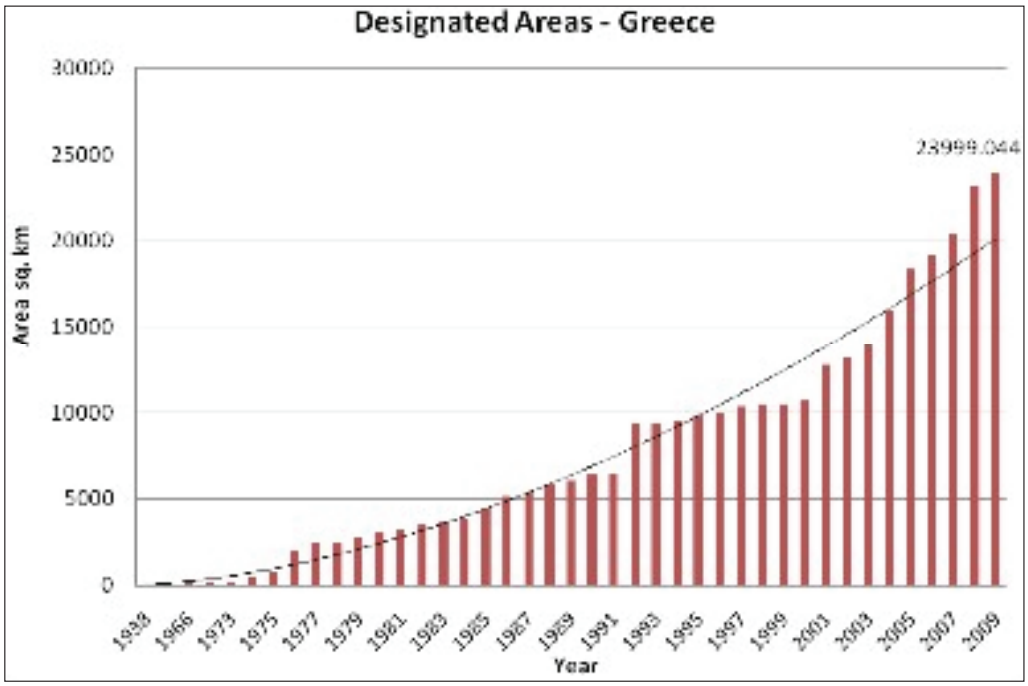


Figure 6. Growth of nationally designated PAs in Greece (cumulative area). Source: NCESD 2010.

than 400 Natura 2000 sites along with the many areas designated as protected according to national laws or international conventions. Regarding the Natura 2000 network, Greece has designated 419 Greek Natura 2000 sites, including 203 Special Protection Areas - SPAs according to EU Directive 79/409 and 239 Sites of Community Importance - SCIs according to the EU Directive 92/43 (23 sites are both SCIs and SPAs; last update May 2011, source: European Environmental Agency). The total area of the Greek Natura 2000 network, when overlapping between SCIs and SPAs is excluded, rises to 4.294.960,14 ha, of which 3.603.354,61 ha are land (27,2% of terrestrial part of Greece) and 691.605,53 ha are marine areas (6,12% of territorial waters). More than the 2/3 of Natura 2000 sites included areas already having a protection status.

The Natura 2000 sites are mostly extensive areas and are scattered throughout the country (Figure 7). The birds of Appendix I of directive 79/409 have the highest number of representatives in Greece, while the presence of mammals, reptiles and habitat types is also high. In

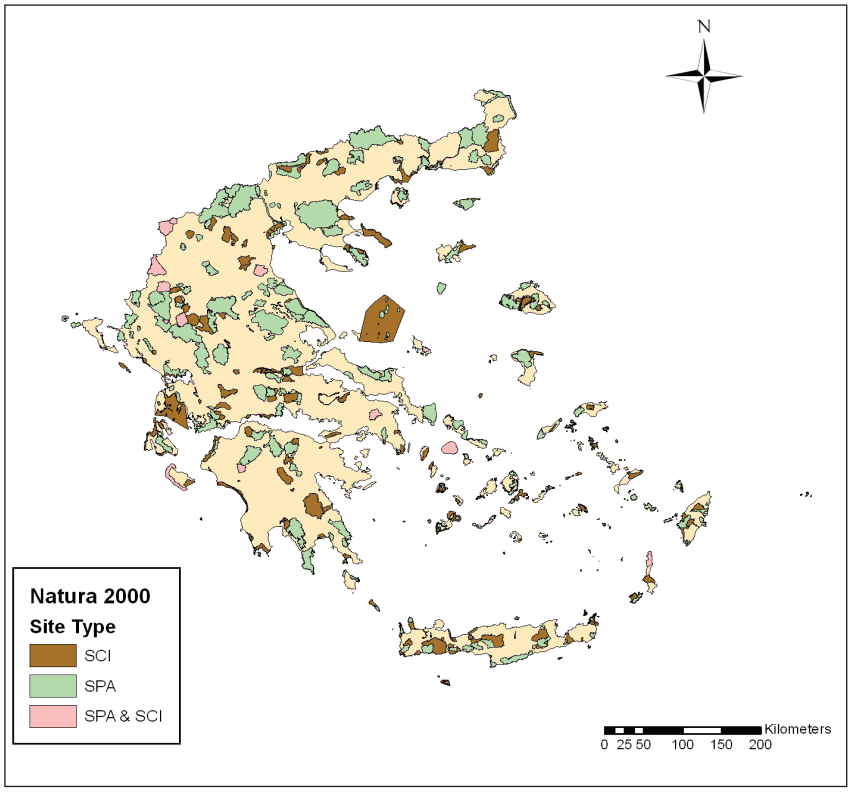


Figure 7. The Natura 2000 Network in Greece (2011).

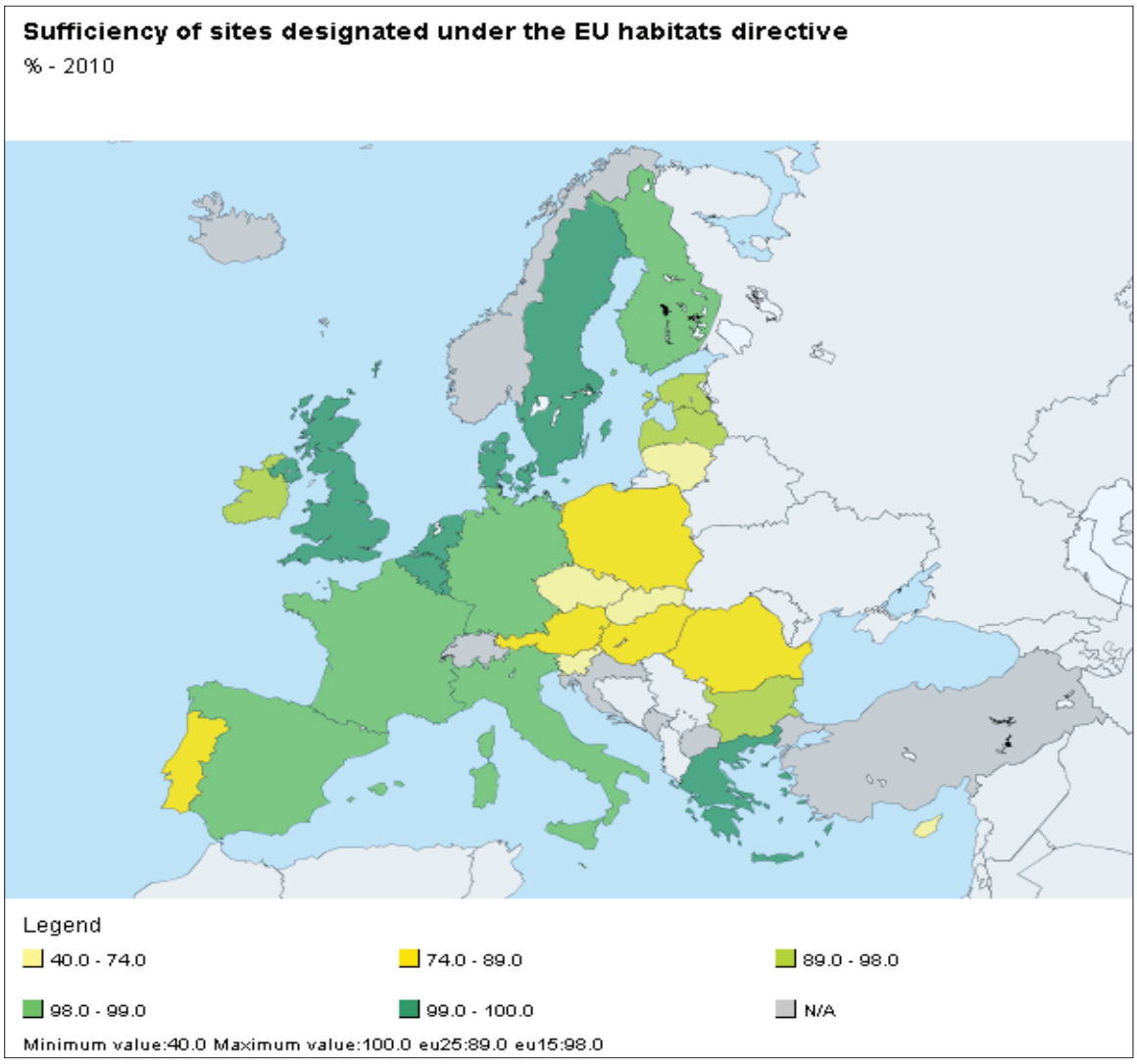
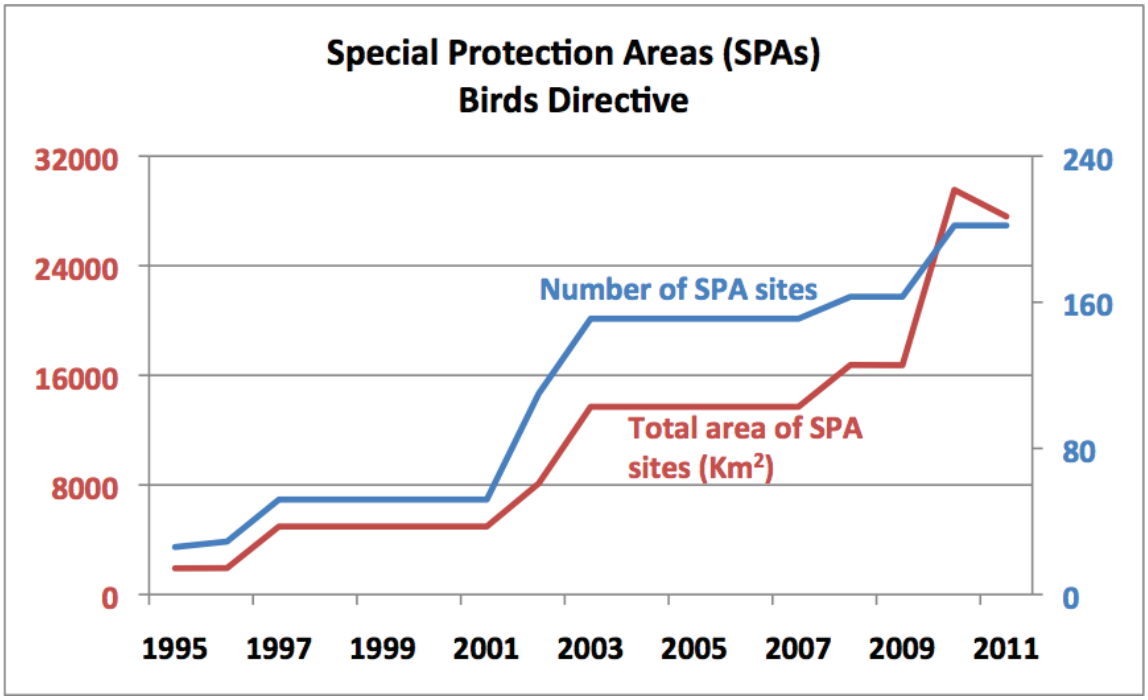


Figure 8. The index of sufficiency of Member States proposals for sites designated under the Habitats Directive (%). Source: EUROSTAT, http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=t-sien160&plugin=1.



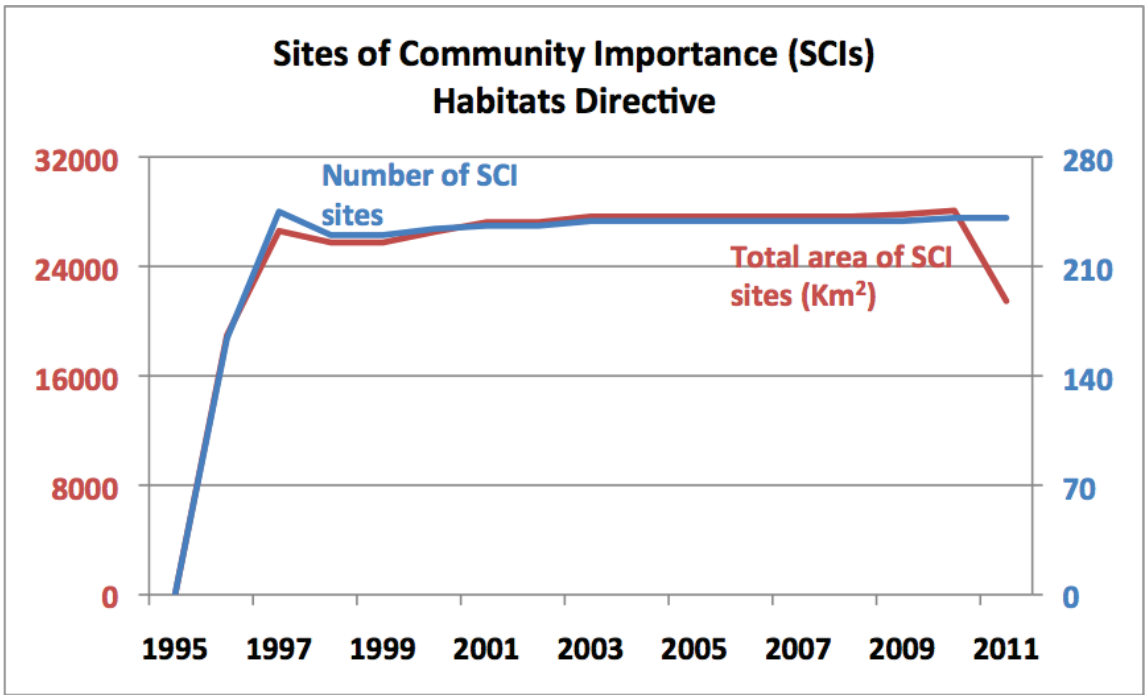


Figure 9. Extent and number of PAs in Greece designated under: a) Birds Directive (SPAs); b) Habitats Directive (SCIs). Data from Natura 2000 Barometer, 1996 to 2011.

addition, a significant percentage of Greek flora is characterized as species of community importance, while the fact that forests and forest areas cover a significant area of the Natura 2000 network underlines their importance for Greek biodiversity.

Greece has shown a good progress, compared to other Member States, regarding the implementation of the Habitats Directive (Natura 2000 Barometer[8]; see also Figures 8 and 9). However, the largest part of Greek biodiversity remains unidentified[9], only a few species have specific management measures in place, the percentage of official management plans concerning PAs is quite small, and local community involvement in the management of PAs

8 See http://ec.europa.eu/environment/nature/info/pubs/docs/nat2000newsl/nat22_en.pdf.

9 For further details see http://www.eea.europa.eu/soer/countries/gr/soertopic_view?topic=biodiversity.

remains limited (Apostolopoulou et al. 2012a, 2012b; MEPPW, 1999). This contradiction between the country's ecological importance and conservation policy effectiveness cannot be understood without taking into account context and history (see Apostolopoulou and Pantis, 2009; Apostolopoulou, 2009).

3.4. Nature Conservation Instruments

The instrument of nature conservation most utilised in Greece has been establishing official and permanent PAs. These areas have been located most frequently on state-owned land, but also on privately owned land, with, however some cases of PAs including both types of land with complicated property rights (e.g. Schinias National Park, for further details see Apostolopoulou and Pantis, 2010).

Until 2011, when the new biodiversity law was introduced, the categories of PAs in Greece with designations based on national (forest and environmental) legislation were the following:

(i) Areas designated according to forest legislation. Forest legislation mainly includes the forest code launched in 1969 and updated 3 times, law 998 passed in 1979 and updated 16 times, and the legislative decrees 996/1971 and 177/75. Based on forest legislation a number of sites (or parts of them) have been designated as *National Forest Parks, Aesthetic Forests* and *Natural Monuments*. The core areas of National Forest Parks and the Natural Monuments are considered strictly PAs, and various activities such as excavation, advertising, industrial activities, tree felling and the destruction of plants, grazing and every form of construction (except that favoring nature conservation) are prohibited. Hunting and fishing, as well as other productive activities, are regulated by the competent FSs and FDOs. In the peripheral zones of National Forest Parks and in Aesthetic Forests, activities are regulated by the competent FSs, aiming at nature conservation (see also Greek report of Dir. 92/43/EC for the 2001-2006 period).

Additionally, *Wildlife Refuges* (Law 2367/98) aim at the protection of the areas for feeding, wintering, breeding and rescuing of the species of wild fauna and flora. Within Wildlife Refuges, hunting, capture of species (for non-scientific reasons), destruction of vegetated areas, taking of sand, drainage of marshes, pollution and inclusion of the area in civil planning are prohibited. The competent Regional Authorities can also regulate other activities within the Refuges.

Overall, the competent FSs and FDOs manage forest areas at regional and local levels in cooperation with the relevant department of the MRDF. The main activities regulated include tree felling, grazing, hunting, use of chemicals, collection of herbs and other plant species, research, application of technical works, restriction to access, etc. Hunting, in particular, is regulated every year at country level, with a Decision from the Minister of Rural Development. FSs formulate specific forest management plans for their areas of responsibility and are also responsible for executive control and logging.

(ii) **Areas designated according to environmental legislation**. Environmental legislation mainly comprises laws 1650/86, 2742/99 and 3937/2011, as well as the transposition of Birds and Habitats directives into national law. Designation categories defined in Law 1650/86 are: 1) Strict Nature Reserves, 2) Nature Reserves, 3) National Parks, 4) Protected Natural Formations - Protected Landscapes, 5) Ecodevelopment Areas. In general, in *Strict Nature Reserves* all activities are prohibited except research and projects aiming at nature

conservation. In *Nature Reserves* only research and some traditional activities are allowed. In the remaining categories of PAs, activities are regulated as mentioned above. *National Parks* and *Ecodevelopment Areas* can include parts characterized as Strict Nature or Nature Reserves. Since 1986, the new designations of National Forest Parks, Aesthetic Forests and Natural Monuments as well as the determination and regulation of activities in the existent ones should be based on the provisions of Law 1650/86.

All the Greek areas protected both by national legislation and the Habitats and Birds Directive are shown in Figure 10.

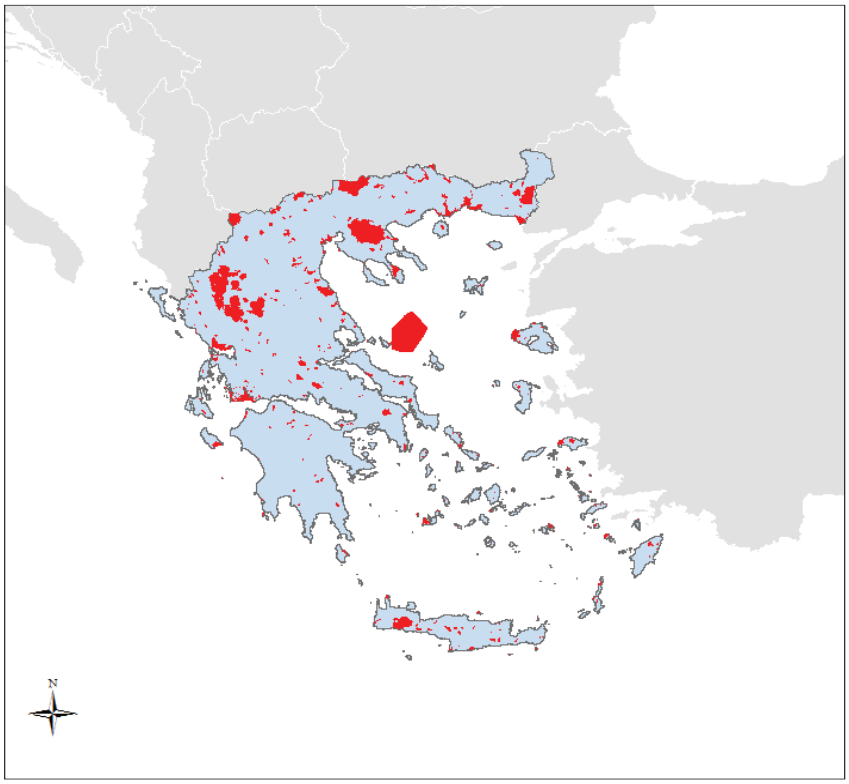


Figure 10. PAs in Greece designated both by National and by EU (Birds and Habitats Directives) conservation legislation.

Since 2011 significant changes have occurred in the categorization of PAs. Currently, the concept of *biodiversity* conservation is consolidated and followed by the concepts of networks of PAs, regional connectivity, systematic monitoring and regulation of activities inside and outside PAs, at least at the institutional level. The categories of PAs according to the new national biodiversity law 3937 (2011) are shown in Table 4.

3.5. Development of the state role relative to market forces, and the forms that these trends have taken in nature conservation policies

The absence of a national conservation strategy, even after the entrance of Greece into the EU, is closely related to the fact that the Greek economy has been chronically afflicted by uneven and abrupt development as well as to the stage of economic development of the country during the period when environmental policy has emerged. The entry of Greece into the EU in 1981 coincided with a period of global economic crisis and of the first wave of neoliberal restructuring (e.g., Reagan, Thatcher). This historical context has forced the Greek socio-economic system in the direction of rapid structural changes and adoption of neoliberal policies, without having established a state similar to the European welfare states. This has been the salient feature of Greek “modernization”. Moreover, many social groups still perceive environmental protection measures as threatening their interests, and govern-

Table 4. The new categories of Greek PAs according to the national biodiversity law 3937 (since 2011).

Type of protected area	Description	Comments
Strict Nature Reserves	Areas with extremely sensitive ecosystems, habitats important for endangered or rare flora and fauna species or important areas for the life cycle of rare or endangered fauna species	
Nature Reserves	Areas with high natural and biological value	Nature Reserves can include Strict Nature Reserves
Natural Parks: National and Regional Parks	Areas with high quality and variety of natural, cultural, biological, aesthetic etc. features that allow the development of actions compatible with nature protection	-Previously designed Ramsar Wetlands and National Forests are designed as National Parks -Suburban natural areas as well as agricultural areas of High Nature Value (HNV) can be designated as Regional Parks. Suburban natural areas can also be characterized as "quite areas". Regional parks can also include "ecodevelopment areas".
Habitat/Species Management Areas: (i) Special Areas of Conservation (SACs), (ii) Special Protection Areas (SPAs) and (iii) Wildlife Refuges	Areas under management to ensure Favorable Conservation Status for protected habitats and species.	- SACs and SPAs can be also included to any other type of protected areas - Ecological corridors between other types of protected areas can be characterized as "wildlife refuges"
Protected Landscapes/ Seascapes	Areas of high ecological, cultural, geological or aesthetic value as well as areas appropriate for recreation	
Protected Natural Formations	Functional parts of nature with special scientific, botanical, ecological, aesthetical or historical and cultural value	This category includes previously designed Aesthetic Forests (based on forest law 996/71), suburban forests, protected forests, as well as Natural Monuments and Landmarks (based on law 996/71)

ments have long avoided strict environmental controls for private producers on the grounds these would hinder industrial development (see also Apostolopoulou and Adams, in press; Pridham et al., 1995).

Since the '80s, when local government was granted the right to establish municipal enterprises involving public and private actors, there has been an increase in the cooperation and interaction between private and public sectors and in "civil society" partnerships. Here we must refer back to the tendency for "less" state in terms of social services (such as education or health or the environmental sector) and increasing support for neoliberal policies.

It is important to note the existence of an important body of literature focusing on environmental governance as an arena where neoliberal policies have been introduced and tested (McCarthy and Prudham, 2004). Governance has emerged as central to neoliberal discourse at a time when issues of accumulation, reproduction and social conflict have become problematic for capital (De Angelis, 2003). An expanded role for non-state actors is pivotal to neoliberal governance (McCarthy, 2006) through "partnerships" and the active participation of public, private and civil actors (Apostolopoulou and Pantis, 2010).

These trends have been manifested in Greece, especially over the last decade, in nature conservation policies through an expanded role for non-state actors, public-private and multi-stakeholder "partnerships" and the active participation of public, private and civil actors,

while there has been an increase in public-private transactions (see also Apostolopoulou and Pantis, 2010; Apostolopoulou et al. under review). The latter has been particularly evident in the context of European Union funding programmes (especially CSFs). Moreover, the meta-analysis of previous data and in particular of interviews with state officials has revealed that there is a tendency in Greek policy discourses to understand the market as the primary solution to biodiversity crisis (Apostolopoulou et al., 2012a, 2012c). Understanding the market as solution to biodiversity loss and reliance on market forces and metrics has been linked with the benefits of private property rights over natural resources (see Mukhopadhyay, 2005), expanded roles for non state actors, and result-based regulatory approaches, all characteristics of neoliberal governance (McCarthy, 2006). Simultaneously, these opinions were often linked with proposals to exclude the majority of local users from PAs management or to privatize natural resources, as the only viable solutions for environmental quality (Apostolopoulou et al., 2012a).

The above issues are extremely significant during this period (2011-2013) that is characterized by the emergence of several new regulations aiming at a further neoliberalization of nature conservation[10] (see also section 4.6.).

3.6. Civic involvement and public access to environmental information

The absence of meaningful public participation on an equal basis can be considered as one of the main problems in Greek conservation policy. Until the '90s, PA designation was an expert-led process coordinated by national and international nongovernmental organizations (NGOs), central administration and the State FS (Trakolis 2001a, 2001b). This designation process rarely provided local people the opportunity to participate or to incorporate their needs, perceptions and interests (Apostolopoulou et al., 2012b; Hovardas and Poirazidis, 2007).

The absence of meaningful civil involvement is further aggravated by the relationship of Greek NGOs with society. The general lack of NGOs' firm social grounding vitiates their legitimacy as representatives of local communities and of general public feeling (see Apostolopoulou and Pantis, 2009). The lack of a strong environmentalist movement has exacerbated these problems allowing powerful economic interests to monopolize government decisions. We must, however, notice that this was not always the case in Greece. During the '70s (and in particular between 1973-1981) there was an increase in public mobilization on environmental issues, related to the fall of Papadopoulos dictatorship and the development of Greek industry. This mobilization expanded quantitatively and qualitatively during the '80s, but there was no corresponding progress during the '90s (see Apostolopoulou, 2009). Today, however, significant environmental struggles are emerging in crisis-ridden Greece with indicative example the mining conflict in Skouries Forest in Chalkidiki (see Apostolopoulou and Adams, in press).

In the last decade, with the transposition of the Habitats Directive to Greek Law an, at least "on paper", institutional shift towards more collaborative governance approaches has occurred regarding the management of some Natura 2000 sites (law 2742/99 about MAs). However, the establishment of management agencies has been quite controversial and produced mixed results while in most cases it has been characterized by the exclusion of

10 These regulations are not presented in detail here because of their appearance during the finalization of this report. For an analysis of the restructuring of Greek conservation policy in the period following the financial crash of 2008 and the intensification of the neoliberalization of nature conservation see Apostolopoulou et al., under revision and Apostolopoulou and Adams, in press.

local community organizations from decision making processes (see Apostolopoulou, 2009; Apostolopoulou and Pantis, 2010). Despite the above mentioned weaknesses it is important to notice that during focus groups discussion, even though different opinions were documented regarding the success of each agency, many research participants acknowledge the importance of these new governance mechanisms and their potential to ensure both a better cross-level coordination as well as a wider participation in PAs management if they succeed in incorporating local people and local citizens organizations in their composition and avoid falling under the thrall of power blocks.

Regarding access to environmental information, Directive 2003/4/EC on public access to environmental information was transposed in 2006 through JMD 11764/653/2006 (Official Journal of the Government (OJG) 327B/17-3-2006). Moreover, the *Convention on access to information,* public participation in decision-making and access to justice in environmental matters (Aarhus Convention) of the United Nations Economic Commission for Europe (UNECE), was ratified by the Greek Parliament in December 2005 through Law 3422/12-12-2005 (OJG A 303 /2005). However, until very recently there was no access to ecological data through a national database. In 2010 (through law 3882) a national portal for geospatial information (geoportal) was established by the Hellenic Agency for Mapping and Cadastre offering open access to citizens and public administration (following the INSPIRE Directive). A reference should also be made to the National Network of Environmental Information (NNEI) that is a horizontal mechanism for the collection and dissemination of data, through intranet or internet, in relation to the main environmental sectors (air, water, nature, waste, emissions, and legislation). The NNEI comprises a national repository of environmental data and a mechanism for exchanging data between relevant environmental administrative services as well as for providing data to the public. The project for the modernization and extension of the network is currently being completed under the E.C. Structural Funds, but until the time of writing this report the NNEI was not accessible to the wider public.

3.7. Changes in nature conservation administration – The three periods of Greek biodiversity governance

In analysing Greek biodiversity governance a distinction can be made between three periods (Table 5).

Focusing on the period from 1998 until today, we should notice that the latter is characterized by steps towards decentralization of authorities and responsibilities, and more market-based approaches in biodiversity governance (for a detailed analysis see Apostolopoulou et al. under review). The latter can be, inter alia, identified in Greek law 2742/99 through its provisions for the establishment of management agencies. These agencies were significantly based on core principles of collaborative governance (see Walker and Hurley, 2004).

In particular, *management agencies* are Legal Persons governed by Private Law (LPPL) accountable to the Minister of EECC, reflecting a multilevel structure and they are based on more results-based management and self-monitoring (see Apostolopoulou and Pantis, 2010). MAs, according to law 2742, are (legally) responsible for the administration and management of PAs. The establishment of the MAs, of a National Committee in 1998 (named "Committee Nature 2000") consisting of a variety of state and non-state actors with the primary responsibility for supervising the establishment of a national network of PAs, as well as of several multi-sectoral and multi-level cooperation networks (see also section 4.3.2) can be considered as core manifestations of the *rescaling* (for a discussion on rescaling see

Table 5. Three periods in Greek biodiversity governance.

	First phase ***(1938-1985)***	**Second phase** ***(1985-1998)***	**Third phase** ***(1998-present)***
Conservation approach	Absolute Nature protection-Untouched wilderness. Emphasis on forest ecosystems.	Supervised human activity. More types of ecosystems under conservation measures.	Biodiversity conservation and sustainable use/management of natural resources.
Institutions	Forest legislation.	Forest and environmental legislation, Convention on Biodiversity, Birds Directive.	Environmental legislation. Habitats directive and many national laws (including the first National Biodiversity law launched in 2011).
Actors	Ministry of Agriculture (national level) FS and FDOs (regional and local levels).	Ministry of Agriculture and MEPPW (national level), FS, Forest District Offices and Municipal enterprises (regional and local levels).	Main responsibility to the MEECC, some overlapping responsibilities between this ministry and MRDF, several institutions with overlapping jurisdictions and responsibilities (national level). Management agencies and FDOs (local level).
Multilevel interactions	Clear dominance of central government and national level.	Increase in the cooperation of different administrative levels and state and non-state actors mainly in the context of CSF.	Steps towards multilevel governance structures and processes.
Governance modes	Bureaucratic hierarchies.	Increasing privatization of public services – New roles for the market.	Clear steps towards market-based approaches.

Apostolopoulou et al. under review; Brenner, 2009; Swyngedouw, 2004) of Greek biodiversity governance. Moreover, in the context of CSFs, Life-Nature projects and the operational program Environment, several NGOs, actors from the local administration, such as development agencies, municipalities, prefectures and regions, research institutes, universities, and management agencies participate in the implementation of conservation policy by conducting environmental studies (including SES), monitoring schemes and management measures and plans.

4. Current regulatory regimes

In this section we explore biodiversity policy in Greece by presenting the main policies and instruments forming the current regulatory regime. We present the variety of policies and instruments regarding selection and management of PAs, and integrated conservation and monitoring, we evaluate them briefly in terms of scale-sensitivity and scale-effectiveness and then describe the forms that these have taken in the specific case of the process of designing and implementing Natura 2000 network in Greece.

4.1. Key nature conservation legislation

Greek environmental policy, as an autonomous policy area with specific governmental structures to support it, has emerged after the fall of the military dictatorship in 1974, mainly during the early '80s. European integration has influenced the Greek governance regime and Europeanization has been a crucial component of domestic institutional and behavioural change in political and social organization (see Diamadouros, 1996; Ioakimidis, 1998). Until now the European governance level has a dominant position in relation to nature conservation policies in Greece.

The priority of environmental policy has hardly been continuous or consistent (Pridham et al., 1995). It is indicative that Greece ratified the Convention on Biological Diversity in April 1994 but until now, and despite the preparation of several draft strategies, there is no official national strategy for the conservation of biodiversity. However, there are two unofficial documents of a strategic character which pinpoint national priorities for the conservation of biodiversity and the protection of the natural environment: (i) the National Strategy (Master Plan) for the Natural Environment in Greece (MEPPW, 1999) and (ii) the National strategy for biodiversity which has been under consultation but has never been adopted (MEPPW, 2009).

The key international, EU and national obligations of Greece include:

- **i.** The "Bern" Convention on the Conservation of European Wildlife and Natural Habitats (Greek law 1335/1983),
- **ii.** the "Bonn" Convention on the Conservation of Migratory Species of Wild Animals,
- **iii.** the Convention on International Trade in Endangered Species – CITES (Greek law 2055/1992) & Modification of the Article XXI of the Convention for the International Trade of species of flora and fauna that are threatened by extinction (CITES) - Law 3026/2002,
- **iv.** the "Ramsar" Convention on Wetlands of international importance (L.D. 191/74),
- **v.** the convention on Biodiversity (Greek law 2204/1994),
- **vi.** EC Council Directive on the Conservation of Wild Birds – the Birds Directive (79/409/EEC and JMD 414958/1985),
- **vii.** EC Council Directive on the Conservation of Natural Habitats of Wild Fauna and Flora, adopted by the Council in May 1992 – the Habitats Directive (92/43/EEC and JMD 33318/3028/ 28.12.1998),
- **viii.** Barcelona Convention for the Protection Of The Mediterranean Sea Against Pollution (1976) & Amendments to the 1970 Barcelona Convention for the protection of the Mediterranean Sea against pollution and to its 1980 protocol on pollution from of land-based sources (Law 3022/2002),

ix. Spatial planning and sustainable development and other regulations (including management agencies), law 2742/99,
x. Harmonisation of the Law No 1650/86 according to EU directives 97/11/EC and 96/61/EC, and other regulations (including Environmental Impact Assessment for natural areas), Law 3010/2002,
xi. Establishment of 25 management agencies of PAs, Law 3044/2002.

It has to be noted that despite the relatively large number of conservation laws (only partly described in this report), as interviewees emphasized, there is a major gap between the regulatory framework for conservation policy and its implementation on the ground as well as several conflicting agendas, policies and goals within and between different administrative and governance levels. The formal institutions are considered ineffective mainly due to the absence of (i) an integrative regulatory framework crossing governance levels, (ii) a national biodiversity strategy (and national biodiversity law until very recently) and (iii) a context-specific legislation given that the majority of national laws are translations of EU directives into Greek. Smpokos in a recent report (2009) identified the following crucial points:

- Dominance of the utilization of direct intervention tools (licensing of industrial facilities, fines etc).
- National control system based on repression and surveillance which mainly refers to illegal or unauthorized activities leading to the development of "end of the pipe" measures without really prompting the establishment of law and a guarantee of environmental protection.
- Need to rationalize the competences and simplify the understanding of the provisions in order to make them useful tools in the hands of competent bodies and to ensure a low cost management control system through computerization and activation of existing infrastructures and institutions.

The last two years have been characterized by several new laws, most of them with clear environmental dimensions. The most significant legal and political development for the environment has been the new national biodiversity law (3937/2011) which has been characterized by huge political conflicts inside and outside the Greek Parliament. Similarly, the new regulations regarding energy, climate change policy, environmental permitting as well as the environmental dimensions of the "Memorandum of economic and financial policy" have negatively influenced Greek environmental policy.

4.2. Site selection and management

Even if the core concepts underlying biodiversity conservation in Greece have evolved over time, partially reflecting changes in the science of ecology, the primary conservation strategy remains the adoption of European Directives mainly focusing on the establishment of PAs. The latter include several categories ranging from strict nature protection to conservation by regulating human activities, with the goal of conserving, preserving, restoring or maintaining (all these words are used in Greek legislation and by the interviewees) biodiversity *in situ* (see also sections 3.3. and 3.4.). In practice, the almost total absence of official management plans and the significant gaps in specific environmental studies and in the necessary legislative documents for the designation of PAs (Apostolopoulou and Pantis, 2009), result in the conservation of biodiversity mainly at species level. Moreover, despite the significant steps towards science based management there is still an undervaluation of reliable research crossing scales.

Until 1986, FDOs had the form of a statutory nature conservation authority, responsible for the development and implementation of conservation policy only in PAs that included forest ecosystems. FDOs have been served by full-time forest staff and received all funding from central government. Therefore, the selection and designation of PAs has been traditionally based on a deductive chain of decisions taken centrally by a close circle of foresters within the Greek FS as Papageorgiou and Vogiatzakis (2006) explain.

Since 1986, the main responsibility for site selection of all types of PAs has been transferred to the MEPPW. However, PAs designed before 1986 were based on forest legislation and were under the responsibility of MRDF. As the majority of interviewees explained, until very recently when the national biodiversity law was announced and the FS transferred to the MEECC, there was a coexistence of the forest and environmental legislation for the designation and management of PAs and several overlapping responsibilities mainly between MEPPW and MRDF at national level and between management agencies (where existent) and FDOs at local level. To add to that complexity, several overlapping responsibilities also exist between MAs, FDOs, municipal authorities, and regional environment and port authorities at regional and local levels. Additionally, there are many other state bodies which are related to biodiversity governance leading to a situation of significant institutional fragmentation of governance and responsibilities, resulting in limited accountability, and increased difficulty and bureaucracy involved in a plethora of formal co-decision procedures for any given PA (see also Tables 6a and 6b). In general, local and central administration, universities and research institutes, members of management agencies, NGOs as well as private economic actors (e.g. “Olympic Properties” in the case of Schinias National Park) can participate in the management of PAs whereas the involvement of local organizations and social groups is still quite limited, and in most cases dependent on their influence and power.

According to Law 1650/86 for the protection of the environment, the designation of a PA presupposes an SES. An SES is necessary to prove the importance of the natural environment of the area under designation and the need for the proposed conservation measures. The SES could be prepared by the MEECC as well as by NGOs; research centres or/and companies providing consulting and assessment services in the field of nature conservation, after the signing of a contract between these bodies and the Ministry. Under the designation act of each area, a number of restrictions for works and activities are determined (see also Greek report of Dir. 92/43/EC for the 2001-2006 period). Additionally, official management

Table 6a. The process of site selection and designation until 2011 (for all types of PAs defined in laws 1650 and 2742). These steps have not always been followed in this sequencea.

Step 1	Selection of the area	MEECC (since 2009 MEPPW), MRDF
Step 2	Preparation of the SES	MEECC or other actors (NGOs, companies, research centres, etc.) after signing a contract with the Ministry
Step 3	After approval of the SES preparation of the JMD (in some cases approval of the JMD and then preparation of the PD)	MEECC and all competent ministries
Step 4	Consultation of the JMD/PD	Regional or/and Local levels (including comments from the public)
Step 5	Approval of the PD or approval of the JMD	Checked by the High Court and then signed by the President of Democracy (PD) or signing by competent ministries (JMD)

Table 6b. The process of site selection and designation since 2011 (law 3937)b.

Step 1	Selection of the area	- Types 1, 2, 3.1: Minister of EECC -Types 3.2., 4.3., 5.1., 5.2.: General Secretary of the Decentralized Authority
Step 2	- Preparation of the SES (Types 1, 2, 3.1.) - Preparation of a Special Report describing the ecological importance and the protected values of the area (Types 3.2., 4.3, 5.1., 5.2.)	MEECC or other actors (NGOs, companies, research centres, etc.) after signing a contract with the Ministry Not explicit in the law (According to the law "the Minister of EECC defines the process of the preparation and approval of the SES and the Special Reports"). Probably for Type 3.2. the MEECC and for Types 4.3., 5.1., 5.2. the Decentralized Authority or other actors (NGOs, companies, research centres, etc.) after signing a contract with the DA or the MEECC
Step 3	After approval of the SES or the Special Report preparation of the PD or the Decision	Types 1, 2, 3.1.: The Minister of EECC approves the SES and is responsible for the preparation of the PD after considering the opinion of Committee Nature 2000 and of the General Secretary of the (relevant for the area) Decentralized Authority. - Type 3.2.: PD from the Minister of EECC after considering the opinion of Committee Nature 2000 and of the General Secretary of the (relevant for the area) Decentralized Authority based on the special report. For HNV areas the PD is issued from the Ministers of EECC and RDF. For marine areas from the Ministers of EECC and Maritime Affairs. - Type 4.3.: Decision from the General Secretary of the (relevant for the area) Decentralized Authority based on the special report. For changing the protected status of the area or decreasing its size a decision of the Minister of EECC is required (and from any other competent Minister). - Types 5.1., 5.2.: Decision from the General Secretary of the (relevant for the area) Decentralized Authority based on the special report after considering the opinion of the elected Head of the Region. For changing the protected status of the area or decreasing its size a decision of the Minister of EECC is required (and from any other competent Minister).
Step 4	Consultation of the PD draft	Regional or/and Local authorities are informed about the content of the draft which is open for comments to all interested parties (authorities, citizens etc.) in Internet for a one month period (opengov website)
Step 5	Approval of the PD	Checked by the High Court and then signed by the President of Democracy
Step 6	Selection of the management scheme	See Table 4

[a] *According to law 1650 a SES is necessary for protected areas designation. This study should lead to a JMD and finally to a PD. JMDs are transitional instruments lacking the status of the Presidential Decree (PD). It is worth noticing that the majority of Greek protected areas have so far JMDs and not PDs.*

[b] *Strict Nature Reserves (Type 1), Nature Reserves (Type 2), National Parks (Type 3.1.), Regional Parks (Type 3.2.), Special Areas of Conservation - SACs (Type 4.1.), Special Protection Areas – SPAs (Type 4.2.), Wildlife Refuges (Type 4.3.), Protected Landscapes/Seascapes (Type 5.1.), Protected Natural Formations (Type 5.2.).*

plans are necessary for PAs. Specific provisions (not always managerial) for some PAs have also been issued through spatial planning (regional spatial plans, specific spatial plan for renewable energy sources etc.).

Since 31/3/2011 there have been new regulations regarding site selection and designation. The process of site selection and site designation before and after 2011 is shown in Table 6a and in Table 6b.

Since 1999, twenty eight (28) management agencies (under the MEECC) have been established for one or more geographically close PAs and a total of three official management plans have been adopted. MAs include 94 of the 419 Natura 2000 sites, designated as priority and cover approximately 1,7 million ha (990.000 ha are part of Natura 2000 network) namely approximately the 23% of Greek Natura 2000 Network. It has to be noted that, in the case of National Parks, the establishment of management agencies is obligatory. However, most of the required legislation for the protection of these priority sites (according to the provisions of law 1650) had been suspended "sine die".

As already mentioned (p. 61) MAs, according to law 2742, are responsible for the management and administration of PAs. However, whereas MAs are responsible for planning, management, administration, monitoring and research, they lack executive powers[1], [2]. Therefore, the regulation of hunting, fishing, logging and law enforcement, especially for the areas designated under forest legislation, remains linked to the FDOs and their wardening systems which can also be supported by the staff of MAs. In many cases, the parallel existence of FDOs (which until recently have been under the MRDF) and management agencies (under the MEECC) has caused confusion and diffusion of responsibilities and discretionary powers (Apostolopoulou and Pantis, 2009).

It is important to clarify that the majority of Greek PAs (including Natura 2000 sites) do not have a specific governance mechanism for their management, and given the rates of establishing MAs to date, they are unlikely to obtain one any time soon (Apostolopoulou et al., 2012b). For the PAs which are without management agencies, as national level interviewees explained, the choice of the specific organizational structure was based on its ecological significance, its area etc. and required a common decision of the Ministers of Development, Environment and RDF. Interviewees instead indicated that opportunities for participation have occurred ad hoc mainly through the context of CSFs, Life-Nature projects and the operational program Environment, dissemination and information actions. Recent studies (Apostolopoulou et al. 2012b; Pediaditi et al., 2009a, 2009b, 2009c) revealed that in PAs without management agencies there are various site-relevant stakeholders without specifically defined responsibilities.

Since 31/3/2011 there have been also new regulations regarding the management of Greek PAs, which are described in Table 7.

The institutional arrangements in Greek biodiversity governance (in particular during selecting and managing sites) are shown in Table 8.

1 Since 2001 there is also an *Office of Special Environmental Inspectorate*. The department of environmental inspectors is responsible for the enforcement of financial sanctions and penalties for violations of environmental laws (mainly of Law 1650/1986).

2 The lack of executive powers hinges on upon article 24 of the Greek Constitution, which declares that ''the protection of nature is the responsibility of the State''.

Table 7. Actors and their roles in the management of PAs at multiple levels. ***(According to the national biodiversity law 3937/2011)***

PA category	Responsible actor for the management of the area
• Strict nature reserves, Nature reserves, Natural parks (national and regional), SACs and SPAs	-Management agencies (article 15, Law 2742/99) -In the absence of agencies (case 1): Public administration or legal entities (article 15, Law 2742/99) -In the absence of agencies (case 2): establishment of Directorates of coordination of PAs at the level of decentralized administration (through PD after relevant proposal of the Ministers of EECC and Interior) -Establishment of an administrative unit (at department level) in the Directorate of Environmental Planning of the MEECC for the coordination and support (legal and administrative support of management agencies, monitoring of agencies' projects) of PA management structures
• Wildlife refuges, Protected landscapes/seascapes, Protected natural formations	Relevant authorities according to the character and nature of the protected object

Table 8. Institutional arrangements in Greek biodiversity governance.

Key legislation for biodiversity conservation	Key actors involved in selecting and designing sites	Key actors involved in site management	Governance levels involved in policy design and policy implementation
Law for the protection of the environment (1650/86; includes all necessary legal acts designing a protected area: SES, CMDs, PDs); Habitats directive (1998); Law for management agencies (2742/99); Biodiversity law (2011)	Main responsibility to Ministry of Environment. From 2011 also important roles for Regions. Several institutions with overlapping jurisdictions and responsibilities.	Management agencies for 94 priority Natura sites. Forest Service and Forest District Offices (for forest areas). Municipal enterprises, NGOs, development companies, research institutes through management contracts or/ and projects. In the absence of agencies establishment of directorates of coordination of protected areas at the level of decentralized administration.	Selection and designation of protected areas at national level. However, regions should approve the necessary legal acts designing the site in order to be official-formal. Implementation at regional and /or local level. Management agencies at local level (multilevel structure) after decision of the minister (national level). Regional directorates (regional level) after proposal of the ministers of environment and interior (national level).

4.2.1. Funding for PA management[3]

The main source of funding for both state and non-state organizations comes from the EU. The Operational Program Environment and Sustainable Development - Axis 9 (2007-2013) includes funds for the support of the 28 management agencies (for official management plans, SES, staff etc.)[4]. LIFE - Nature projects have been the basic source of funding for targeted projects for biodiversity conservation. LIFE projects mainly concern the conservation

3 See also Section 4.2. "Funding".

4 In particular: 107.610.000 euros from European funds, 26.902.500 from public national funds and 0 from national private funds.

and management of specific species and habitats protected under the Birds or/and the Habitats Directives and in few cases Natura 2000 sites (see section 3.2.). Research regarding endemic species is being exclusively funded by NGOs, research centres and universities. Compensation for lost income is included in article 22 of Environmental Law 1650 passed in 1986 but has not been implemented in practice, despite significant conflicts in PAs.

Incentives for conservation are included in the Axis 2 («Protection of the environment and sustainable management of natural resources») of the Rural Development Programme of Greece 2007-2013 and in particular in measure 224 "Natura 2000 schemes (for forests)" and in measure 213 "Natura 2000 schemes and schemes connected to the water framework directive (WFD)" (http://www.agrotikianaptixi.gr). The goal of the latter is the maintenance, restoration and conservation of a sufficient variety of habitats in Natura 2000 sites for all species of wild avifauna as well as to give incentives to farmers to implement the WFD in Natura 2000 sites. The responsibility for their implementation lies with the Department of Aesthetic Forests, National Forests and Hunting (recently it has been transferred from the MRDF to the MEECC) and concern forest owners or unions of forest owners. Additionally, biodiversity law 3937 includes explicit references to incentives.

Voluntary schemes mainly consist of private initiatives for specific actions, e.g. afforestation or cleaning of beaches organized by specific Media, local organizations or NGOs. Also, national environmental legislation gives the opportunity for the establishment of "Park friends" but until now it has remained unactivated.

4.2.2. Role of science in site selection and management

As already mentioned site selection until 1992 had been characterized by the concept of conserving "untouched wilderness" and was not based on scientific criteria. PAs were established in the absence of any systematic ecological evaluation following the idea of merging scenic beauty with historical values (Papageorgiou and Vogiatzakis, 2006; Cassios, 1980). Additionally, there was a huge variability in the mean size of different types of PAs (see Papageorgiou and Vogiatzakis, 2006 for further details).

In implementing Natura 2000 scientific criteria, although quite diverse (e.g. endemism, key species etc.), have been applied for site designation. The initial national inventory of Natura 2000 sites was undertaken by a state-funded research centre (EKBY) along with four academic departments and the whole process can be characterized as a significant "scientific exercise" (Nantsou, 2007). However, site selection was not based on complementarity-derived priority sets so that the consultations between the relevant ministerial departments led to several compromises and changes. In addition, a significant part of Greek biodiversity, and especially important endemic species, is missing from the appendixes of the directive indicating the limited participation of Greek authorities in the process (Nantsou, 2007, p. 339).

Several studies have been funded by the MEECC about the management of PAs including the "Specifications and Model Studies Regarding Protected Areas and Management Agencies" (2001) published by the MEPPW and prepared by OIKOS – Management of Natural Environment, the "Guidelines for the preparation of management plans for Protected Areas" (2004) published by the Greek Biotope/Wetland Centre (EKBY) and the MEPPW, and the Identification of compatible activities in compliance with the qualifying species of the special PAs (2009, http://www.ypeka.gr/Default.aspx?tabid=539& language=el-GR). In addition, there are several legal acts relevant to the management of PAs that were described

in the Greek report of Dir. 92/43/EC for the 2001-2006 period such as: SES, JMD and PD for the designation of a PA, Ministerial Decisions for the official operational regulations (law 2742/99), Official Management plans (law 2742/99), LIFE projects, Forest management plans, Territorial planning instruments, Planning instruments, Process of environmental permitting, Agri-environmental schemes and Non territorial planning instruments.

4.3. Integrated conservation

In this chapter we explore policies and instruments supporting (or not) biodiversity conservation «outside» PAs, by influencing regional connectivity and conservation in the wider landscape. These policies and instruments include also nature conservation instruments (described above) evaluated here from a different perspective.

4.3.1. The first national biodiversity law

The first national law for biodiversity conservation (law 3937), already mentioned in this report, was enacted in 2011 with the goal of ensuring "the sustainable management and effective protection of biodiversity as valuable and indispensable national ecological *capital*". This law includes the following subtargets: a. The effective protection and management of important biodiversity areas through the best practice organization and operation of the national system of PAs, b. the satisfactory integration and implementation of the EU law for biodiversity protection, c. to achieve a favourable conservation status of biodiversity, of natural habitats and of fauna and flora species, d. to establish effective control mechanisms to ensure the implementation of the institutional framework for biodiversity protection, e. to promote scientific research and knowledge (for species and ecosystems) as a main tool for the effective management and protection of biodiversity, and to integrate biodiversity conservation considerations in all levels of planning and in all sectors and development policies.

The responsibility for coordination lies with the Greek Government under the direction of the Minister of Environment, Energy and Climate Change whereas the responsibility for implementation rests with the MEECC. In addition, all competent ministries are responsible for integrating biodiversity conservation considerations into sectoral policies. Priority is given to the adoption of strict protection measures for biodiversity in planning, agricultural, tourist and energy policies.

This law was under public consultation (on-line access for everyone) only for 6 days. During this period 305 comments have been made on the Internet (from individuals, research centres, non-state actors etc.). The degree to which these comments have been taken under consideration is unknown. However, as interviewees confirmed, specific NGOs had greatly influenced the content of this law even before the beginning of the public consultation process.

This law includes specific references to all levels of biodiversity as well as to spatial and temporal scales. There are also explicit references to "quiet areas", ecological corridors, integration of biodiversity to other sectors, connectivity and coherence of PAs networks for the first time in Greek legislation as well as integration of forest and nature conservation legislations through a new categorization of PAs (including all previous existing categories; see Table 4). Significantly, for regional parks a reference is made to *Nature Value Areas* as well as to *Ecodevelopment Areas* that could be regional zones of a natural park.

This law also refers to the necessity of preparing official management plans specifying the actions and activities that can take place inside PAs. However, the definition of the

categories of PAs includes the description of the type of activities that can occur at each different PA.

An important issue is that, given the major gaps in scientific knowledge about ecosystem processes and ecological needs for the majority of species and habitats, the general and vague reference to the interrelationship between different levels of biodiversity (without any specific provision) seems superficial. The law does not deal effectively and explicitly with the chronic problem of information/knowledge sharing and it is not accompanied by specific action plans, something very common in Greek legislation.

In addition, the law does not include specific reference to the participation of local communities and to civic involvement except for a vague reference to the need for "public consultation" whereas it does not define who and how will secure the integration of biodiversity conservation into sectoral policies.

Even though the law refers to management agencies and their potential to link planning with implementation and promote collaborative governance, it does not offer solutions for their current failure to function.

This law was supposed to integrate Greek biodiversity legislation consisting of many different laws, JMDs and MDs into a common legislative framework. However, it has been criticized for giving the permission to design and install renewable resources projects in Natura 2000 sites and for allowing off-plan building inside PAs.

4.3.2. Planning

The development of the country's territory has been extremely influenced by statues focusing primarily on urban development and the extensions of statutory town plans (Sapountzaki and Karka, 2001). Unauthorized development, especially residential, is widespread and poorly controlled resulting in chaotic urban patterns and environmental degradation. Because of the chronic legal vacuum and in the absence of consolidated legislation and a core urban planning statute, the development of Greek territory has been governed by a number of laws, regulatory statutes (presidential decrees and ministerial decisions), circulars etc. (Sapountzaki and Karka, 2001). In general, the legal and institutional framework is chaotic, administration has proved unable to design long-term, integrative policies, departures from approved plans are frequent, there is a lack of coordination between levels of spatial planning and development and effective systems of control of plan implementation on the ground are non-existent. Moreover, in practice, consultation with the public and public involvement remains very formal and restricted (Albrechts, 2004).

4.3.2.1. *Law 2742 about land use planning and sustainable development (1999)*

This law determines fundamental principles and institutionalizes up-to-date planning instruments, processes and tools that will promote sustainable development, productive and social cohesion and environmental protection. Its subtargets include: a. the protection and restoration of the environment and the conservation of ecological and cultural resources, b. the promotion of economic and social development of the country and its competitive role in European, Mediterranean and Balkan regions, c. the support of economic and social cohesion, especially in areas with significant problems of limited development, social differences and environmental degradation or in geographically isolated areas.

The National Committee of Governmental Planning and Sustainable Development Policy (Members: minister of environment, minister of interior, minister of economy, minister of rural development and food, minister of economy, competitiveness and shipping, minister of culture, minister of Infrastructure, transport and networks) is responsible for the coordination of the implementation procedure. Several state and non-state actors can potentially participate in the National Committee's meetings, but only at the invitation of the president of the committee and without having the right to vote. Moreover, the law defines the establishment of the National Board of Planning and Sustainable Development with 19 members: 2 from local administration, 3 from scientific organizations, 8 from economic and social organizations, 3 from NGOs, 2 from universities and 1 scientist (president of the board). This board should promote public consultation, comment on the national and regional policies and policy instruments, make specific proposals and propose specific measures to the minister of the environment.

This law included the decision for the establishment of management agencies (25 such agencies were then established through law 3044) in PAs, and it integrates forest and biodiversity legislation. Moreover, it defines the content of planning instruments at all levels as well as the need to evaluate them every two years through assessment studies. It also includes the establishment of *Areas of Special Spatial Interventions* which require special regulations (e.g. areas vulnerable to environmental risks/catastrophes/climate conditions).

4.3.2.2. *Policy for Land use planning*

At national level, there is the General Context of Planning Design and Sustainable Development (6876/4871/A) and four specific plans (including plans for tourism and the strategic assessment of its environmental impacts, for industry and the strategic assessment of its environmental impacts, for renewable energy and the strategic assessment of its environmental impacts) launched in 2008 and 2009. The goal of the General Context is the determination of strategic actions for integrative and sustainable planning and development for a period of 15 years. There are also several subtargets including specific references to the conservation of biodiversity.

The National Committee of Governmental Planning and Sustainable Development Policy (see above) and the Minister of Environment are responsible for coordination and implementation, together with a variety of state and non-state actors who are also involved in the implementation process. Moreover, there are references to the need for cross-sectoral coordination and public involvement. Several ministries, public authorities and enterprises as well as the National board of Planning and Sustainable Development took part in the preparation of the General Context of Planning and Sustainable Development which has been voted only by the half of the National board's members. The MEECC has ordered a specific study (it was 4 years under preparation) that resulted in a proposed plan. There was a huge difference between the proposed plan and the actual plan that the ministry presented in the national committee.

Overall, this plan could be characterized as quite general and vague on many issues. The references made to biodiversity or ecosystem services in most cases do not include any concrete obligations. Moreover, in many cases it includes conflicting objectives, e.g. there is a reference to the need to ensure connectivity between natural areas through corridors but without any explicit obligation to do it (the same regarding arbitrary building, sustainable tourism or sustainable agriculture). Additionally, it includes several references to the expansion of road networks without taking into account ecological connectivity (the relevant

sentence is as follows: "*road networks should not cross Natura 2000 sites and protected landscapes if possible*").

After the chronic absence of a national planning strategy (and cadastre) this was the first attempt towards the integration of environmental protection and development. However, the General Context does not take into account the relationship between land uses and environmental sectors. Moreover, it was not based on a Sustainability Assessment and/or an Impact Assessment (NGOs, 2007). The plan has been criticized for prioritizing economic development and for being too general regarding environmental issues, and its preparation and implementation has been characterized by the absence of sufficient cooperation between the competent ministries and institutions, the absence of meaningful public participation and the unequal participation of different social groups.

At regional level, there are 12 Regional Spatial Development Plans (the exception being Attica which is covered by the master plan of Athens) published in 2003 and 2004 coordinated by the Minister of Environment and Regions. The minister of environment or the secretary of the region should ensure that the plan promotes and specifies the implementation of the national land use guidelines. The regional plans are the base for the coordination of sectoral policies, programs and investment plans of the central and local administration and the public authorities and enterprises.

At local level, there are the Local Spatial Development Plans from 1988 until today. Municipalities, local administration and local communities are involved in the implementation of these plans. Public participation is involved in the production of the plan, through public meetings and announcements in the press. In the case of statutory town plans, the schemes are displayed in the town hall of the area concerned and individual citizens can lodge a formal objection, which is first adopted or rejected, by the local authority concerned, and then taken into account by the minister or prefect, as the case may be, before final approval. Ultimately the plan may be challenged in the supreme administrative court (Council of State), a practice that is very common in Greece (Sapountzaki and Karka, 2001).

4.3.3. Agri-environmental subsidies

The EU's system of agri-environmental measures (AEM) was first implemented in 1995 in Greece (and the criteria were strengthened in 2004 and 2009). The initial implementation of agri-environmental measures in the 1990s was belated, as these were a novelty for Greek agricultural policy (Louloudis and Beopoulos, 2002). The implementation of AEM in Greece can be divided in three periods.

(1) The first agri-environmental program in Greece (1994-1999) based on the regulation No 2078/92, started in 1995 including 9 measures covering 478.5 million ha (4 horizontal –national- schemes and 5 zonal schemes only applied within specifically targeted areas) (namely 6% of UAA). However, only two horizontal and two zonal measures have been actually implemented including less than 1% of UAA. The measure of *organic farming* covered 11.449.4 ha and more than 3.000 producers, while most of the land included (46%) was located in mountainous or semi-mountainous areas, only 35% in the lowlands and 19% within Natura 2000 areas (Louloudis et al., 2000). The implementation followed a rather top-down approach with the Directorate of Spatial Planning and Environmental Protection of the Ministry of Agriculture being the responsible institution, whereas for some articles a few actors

(e.g. Pan-Hellenic Confederation of Unions of Agricultural Cooperatives - PASEGES) have participated in negotiations with state officials (this is the case until today).

(2) The second period (2000-2006) was based on Council Regulation (CEE) No 1257/99 and was characterized by the establishment of the Special Management Authority. The initial planning included 443.113 million Euros, 85.246 beneficiaries and 388.146,4 ha. However, until the end of 2004 there had been 13.062 participants, 200.150,5 ha covered and 208 million euros spent (Vlahos, 2008).

In the 2000-2006 programming period the European Commission approved 17 measures that differed thematically and geographically. As Kizos et al. (2010) explain, geographically, some covered the whole territory of Greece (e.g. measure 3.12 on the reconstruction of terraces) and others specific areas. Overall, the majority of implemented schemes in Greece address organic plant production, organic livestock production, 20-year set aside, reduction of nitrogen pollution and conservation of endangered breeds. The highest uptake concerned reduction of nitrogen pollution.

The AEM (agri-environmental measures) part of the UAA (useable agricultural area) is shown in the following figure 11[5]:

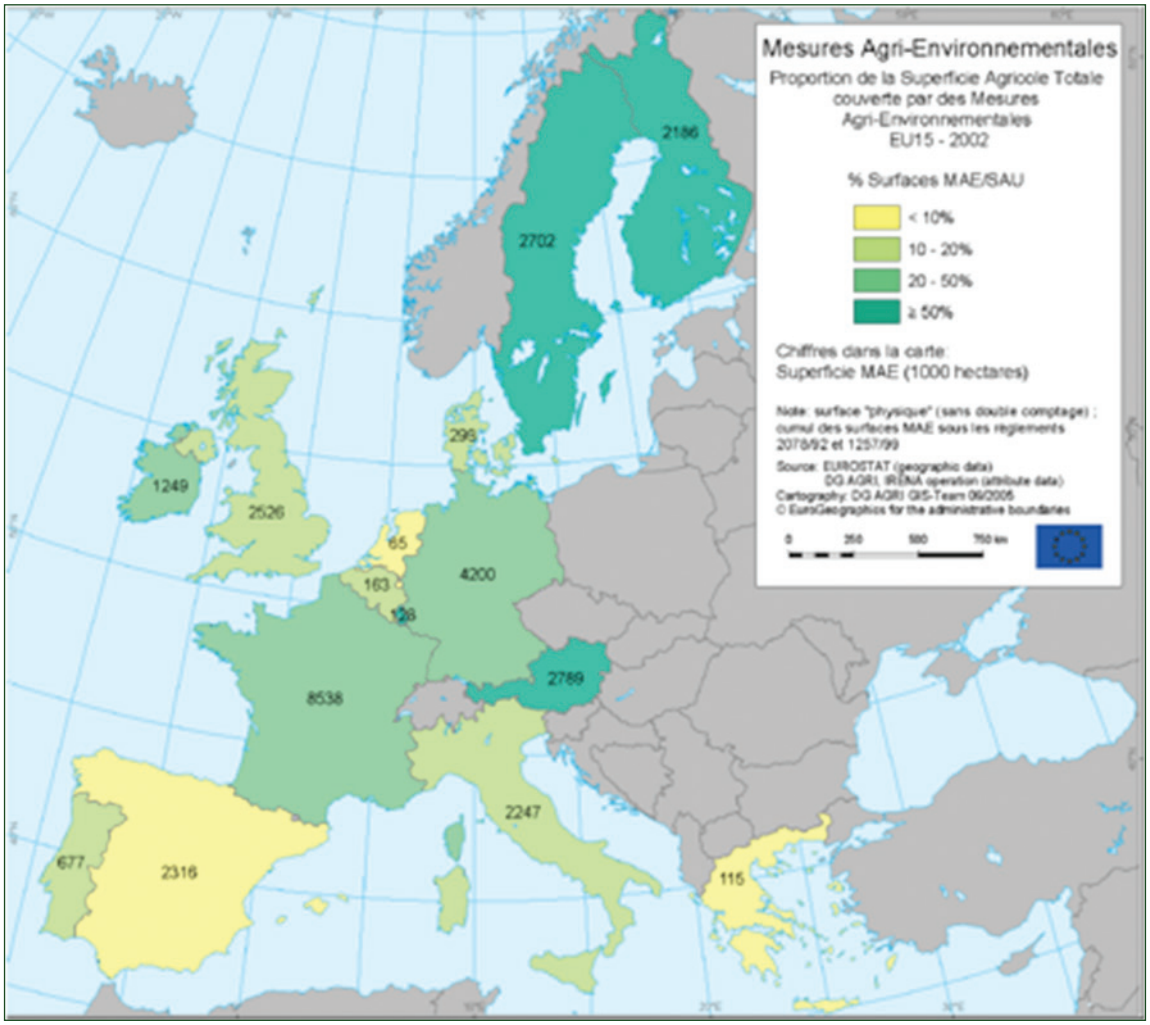


Figure 11. Estimate of the part of the UAA in the EU 15 covered by AEM in 2002 (Regulations 2078/92 and 1257/99). Source: Oréade - Brèche (2005) http://ec.europa.eu/agriculture/eval/reports/measures/ex_sum_en.pdf

5 See also Appendix 3 for information regarding AEM.

(3) 2007-2013: It is important to notice that there has been no call announced regarding agri-environmental measures in the context of the new Rural Development Programme of Greece (period 2007-2013) up until September 2010. Currently agri-environmental schemes include support methods of agriculture production which aim at the protection and improvement of environment and natural resources, at the conservation of biodiversity (especially of genetic resources) and the conservation of agricultural landscape and its characteristics, aid for farmers to use farming practices compatible with the requirements of protection of the environment and natural resources and maintenance of the countryside and the landscape.

Subsidies are coordinated by the Special Management Authority of the Program for Rural Development in Greece (Ministry of Rural Development) and implemented by the Department of Planning and Environmental Protection of the Ministry of Rural Development and Food and by the Regional Departments of Rural Development. The ministry of Rural Development (national level) has the main responsibility, whereas prefectural units have to evaluate the proposals (regional level). The coordination of policies and the cooperation between the MEECC and the MRDF as well as between farmers and management agencies is almost non-existent according to interviewees.

With the exception of organic farming, budgets have been pretty modest and as a result the number of beneficiaries and the area of land covered have been limited. Compared to the implementation in other EU countries (Oñate et al., 2000), implementation in Greece appears more fragmented and less targeted towards specific areas or problems or indeed the landscape (Kizos et al., 2010). Due to the considerable lack of experience and know-how, the implementation of agri-environmental measures has been very limited compared to other member states (Damianos and Giannakopoulos, 2002). The number of farmers involved even if, significantly increased, is still rather low.

In general, ecological needs at regional level are rarely considered, the schemes seldom include integrated strategies for combining the implementation of schemes with management plans, and farmers usually manage sites as isolated entities. It also appears that the implementation agencies are often more interested in the formal requirements of the program (financial transparency, accountability etc.) rather than its actual environmental impact, especially for agri-environmental programs with a short history in Greece (Louloudis and Beopoulos, 2002). Overall, there is very limited information regarding how farmers incorporate agri-environmental measures into their practices and very few surveys assessing farmers' sensitization and willingness to participate in agri-environmental issues (e.g., Beopoulos and Louloudis, 1997; Damianos and Giannakopoulos, 2002; Alexopoulos et al., 2010) and no official national evaluation concerning their implementation.
It is noteworthy that the development of specific indicators and methodologies for evaluation as well as the establishment of a new management authority responsible for the coordination of agri-environmental measures at national level are under elaboration by the MRDF according to interviewees from the ministry.

4.3.4. Forest policy

It has been widely recognized that the implementation of the forest legislation and its respective rules and regulations has failed to grant effective protection to the designated areas, mainly because of several administrative and institutional weaknesses, ineffective cross-level and cross-sector coordination and insufficient park authorities (Larson, 1974;

Duffey, 1982; Kassioumis, 1992; cited in Papageorgiou and Kassioumis, 2005). The chronic absence of forest maps and cadastre, and the absence of state support for the FS (e.g., lack of trained personnel, equipment etc.) have obstructed the consideration of the interaction between regulation, planning and management, and have created major conflicts with planning and residential policies.

It has to be emphasized that in the current post-crisis era a major deregulation of forest legislation is taking place (see Apostolopoulou and Adams, in press).

4.3.4.1. *Forest legislation - Law 3889 and Decision number 199284/707 ("Acceleration and simplification of the ratification process for forest maps" and "Ratification Process for Forest Maps")*

This law mainly refers to requirements already extant in forest legislation. However, the chronic absence of forest maps, despite the existence of the relevant obligation from 1976, has been a huge problem in the management of Greek forests. As data from "The Greek Ombudsman" (independent authority, http://www.synigoros.gr/en_index.htm) have shown from 1976 to 2007 the state has prepared temporary forest maps for only the 6% of the country. The ratification of the forest maps according to law 3208/2003 is necessary for the identification of the areas in which the regulations of the forest code have to be implemented, although this is a necessary tool for protecting forests from arbitrary building and urban sprawl.

4.3.5. Concluding remarks

Overall, in Greece, despite the prominence of rhetorical support for environmental policy integration, there is, in practice, a clear priority for development and economic plans without taking the necessary measures for nature conservation. Similarly, whereas connectivity and conservation in the wider landscape are often mentioned in laws and reports, there are limited specific actions and practices in support of these ideas in actual policy-making and planning. There has been so far an absence of specific and effective mechanisms to enhance or improve connectivity and integrated conservation in different sectors, whereas sectoral fragmentation and absence of strategic conservation thinking and practice hinder the improvement of connectivity. It is indicative that the report of the MEPPW "National policy for sustainable development" (2003) outlined main strategic guidelines for the integration of sustainable principles into sectoral policies almost a decade ago, but still remains significantly inoperative. Similarly, despite the many unofficial drafts, an official biodiversity strategy has yet to appear.

The NCESD (National Center for the Environment and Sustainable Development) is a scientific body that was supposed to contribute to the integration of an environmental dimension into multiple sectors (especially development policies) as well as to the horizontal coordination of public planning and conservation/environmental policies. The establishment of the NCESD was a step towards environmental integration but, as yet, it has limited resources and staff. In general, the absence of state capacity and financial resources discourage the development of integrative projects. So far Greek environmental policy has been characterized by incoherence of policies and legislation, functional overlapping of competencies, fragmented administration, and ignorance of cross-scale interactions seriously hindering improvement of connectivity. In addition, there is no explicit procedure through which the MEECC monitors and coordinates the issues of environmental protection and policy in practice.

Regarding funds for integrated conservation, it is important to notice that, so far, the obscure and overlapping responsibilities of different levels of governance that disperse the limited resources available inhibit their implementation. European and international programs, such as Local Agenda 21, Urban and Habitat II Agenda for sustainability in urban areas, have been characterized by a rather fragmented and limited implementation whereas LEADER (EU programme for rural development) was mainly used for the promotion of ecotourism (e.g., Prespes, Dadia). Other relevant economic instruments are included in the Axis 3 ("Agri-environmental schemes/measures") and in the Axis 2 ("Protection of the environment and sustainable management of natural resources", measure 214 agri-environmental schemes, measure 213 "Natura 2000 schemes for farmers", and measure 224 "Natura 2000 schemes for forests") of the Rural Development Programme of Greece 2007 – 2013 (3rd CSF) of the MRDF. However, so far there have been very few calls for these measures. However, and despite current trends, agrienvironmental schemes in Greece increased significantly during 2001-2005 (see also Appendix 3, Figure b).

4.4. Regulatory regimes for monitoring

A systematic monitoring system for all habitat types and species of Community Interest has not yet been established in Greece. The second report of the Habitats Directive is planned to be a significant input for its planning. Monitoring has been mainly based on the obligations of Greece under the EU Habitats Directive for all species of Community Importance. However, according to the six-year assessment of Natura 2000, the conservation status for the 62% of species that receive protection under the Habitats Directive remains unknown. The biggest gaps in knowledge concern invertebrates of community importance (97% with unknown conservation status), mammals of community importance (75% with unknown conservation status), reptiles of community importance (57% with unknown conservation status) whereas for flora species of community importance 55% is also assessed as having unknown conservation status. However, for the few species and habitats, for which monitoring programs are being implemented, the quality of data has been considered satisfactory.

According to national law 2742/99, management agencies have the responsibility to organize and supervise monitoring activities and policy-makers have set some priorities regarding the monitoring of the Natura 2000 sites through the selection of 28 management agencies. However, legally required monitoring (national law 2742) is not carried out for lack of resources, data, or proper process for setting and evaluating objectives. Overall, local administration (development agencies, municipalities, prefectures and regions), research institutes, universities and NGOs are mainly responsible for the implementation of monitoring actions, and management agencies monitor specific environmental parameters but without consistent and sufficient state support. Other reasons for monitoring include management or/and restoration purposes, scientific interest or/and international obligations.

Collections and data on the conservation status of many species are kept by Universities, research centres (e.g., Hellenic Centre for Marine Research), the Zoological Society and the Botanological Society of Greece. Moreover, NGOs are carrying out monitoring activities as follows:

- WWF Greece: monitoring of birds, mammals, plants and fish.
- Archipelagos, Institute of Marine and Environmental Research of the Aegean Sea: monitoring of marine and terrestrial biodiversity of the Aegean Sea and islands.
- Medasset, Mediterranean Association to save the sea turtles: field assessments and surveys for marine turtle nesting sites, foraging and breeding grounds.

- Archelon - The Sea Turtle Protection Society of Greece: monitoring of marine turtles.
- MoM - Hellenic Society for the study and protection of the monk seal: monitoring of monk seals.
- Arcturos & Callisto - Environmental organization for wildlife and nature: monitoring of large carnivores mainly the brown bear.

Monitoring is occasional, and mainly depends on EU funding. A detailed mapping of all habitat types of Annex I of Habitats directive completed in 2001 and the third CSF financed the study. Additionally, LIFE - Nature projects have been used as a significant instrument for the application of monitoring actions, mainly for specific protected species. National funding has been responsible for very few projects at local level (e.g., 2002-2003 monitoring of specific species in few Natura 2000 sites from ETERPS) in addition, a project with national funding, conducted in collaboration with Ramsar Convention and European Space Organization concerned the development of instruments and methodology for monitoring wetland habitats with satellite images. During 2001 - 2006 monitoring actions were undertaken mainly in the frame of scientific projects, for certain time periods and for certain species or areas of particular interest (based on EU funding).

The geographical scope of monitoring is mostly local, and, in the majority of cases, there is no updating and assessment of existent databases. In general, the absence of an integrative and reliable database open both to researchers and to the public is considered as a huge constraint on effective monitoring. In addition, one of the most significant problems proved to be the existence of fragmentary data from monitoring carried out by NGOs, universities and research institutes.

An important scale-related issue proved to be that monitoring initiatives are currently focused only on Natura 2000 sites and on species and habitats of community importance, indicating a major gap in dealing with species and habitats that are important at national level. This is more directly related to the general absence of clearly defined national responsibilities and/or national biodiversity strategy, and the strong reliance of current national policies on EU requirements. All interviewees argued that the species of community importance do not cover the richness of Greek biodiversity or even the national priorities that the country itself should have defined.

As mentioned before, during this period (2011) national guidelines for monitoring are being prepared by the MEECC and the Commission Nature 2000.

4.5. Assessing scale-sensitivity of Natura 2000 designation and implementation in Greece

The case presented here is quite informative regarding the outcomes of the interaction on the ground of all the above-described processes.
The major problems in the designation and management of Natura 2000 in Greece remarked by NGOs, scientists and civil servants, proved to be limited research concerning ecological functions, limited attention to temporal and spatial scales, the absence of explicit standards for Specific Environmental Studies and, especially, of reliable information about land uses and human activities (especially outside Natura 2000 sites) and the limited incorporation of local knowledge in spite of its importance for building a more complete information base (Berkes et al., 2000). Gaps in information and knowledge have prevented understanding ecological processes and their interrelationship with socio-economic and political factors re-

sulting in a general weakness in understanding the spatial patterning of human-environment relationship. Dimitrakopoulos et al. (2004) argue (by focusing in the case of Crete) that it is questionable whether the Natura 2000 network is adequate to fulfill its major goals. They explain that, even if one assumes that the design (i.e. location, size, shape, connectivity, etc.) and the management plan (i.e. demographic and genetic conservation measures, control plans for catastrophic events, ecosystem processes, management, etc.) of individual SACs are technically correct, it is legitimate to predict that the limitation, control or regulation of certain human activities in areas outside the sites is essential to facilitate biodiversity within a SAC, and to maintain the populations of species not contained in the SACs at viable and functional levels.

Moreover, the ministers and powerful economic actors had strongly influenced the selection and zoning of PAs, something that has also happened in other member states (see Maiorano et al., 2007). From 2000 to 2003, 27 management agencies were established. The agencies were established without a specific prioritization study (Tsianou et al., 2013) and covered 61 of 359 Greek Natura sites[6]. The establishment of management agencies hasn't been accompanied by a rational designation of PAs based on law 1650/86 as it supposed to (MEPPW, 1999). As of October 2009 there were 28 MAs (Figure 12) and significant gaps remain regarding the necessary legal acts. Until today with the new MEECC the authorization of the JMDs and the PDs faces major problems because of the limited coordination and the conflicting-oriented interplay between the competent ministries, as well as between different administrative and governance levels generating mismatches due to administrative divisions, conflicting policy goals and governance fragmentation. Moreover, the advisory boards of most management agencies have changed several times highlighting the temporal-scale mismatches resulting from electoral cycles.

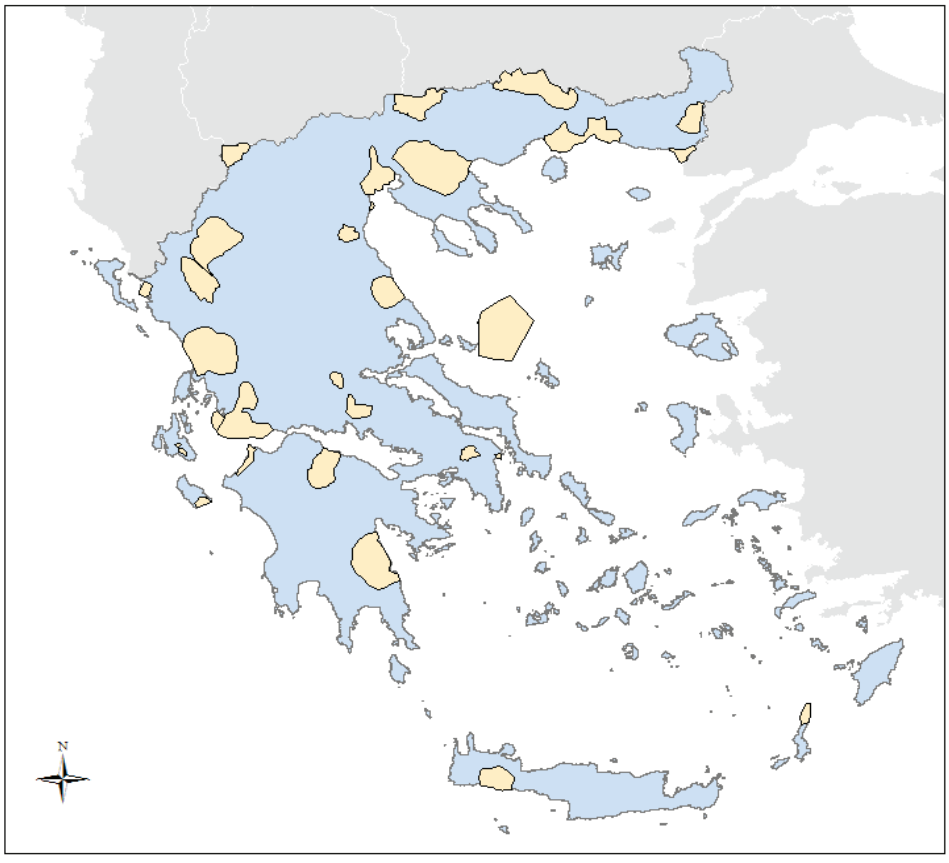


Figure 12. The boundaries of the 28 designated Management Agencies in Greece.

6 As already mentioned, today there are 28 agencies covering 94 Natura 2000 sites.

Overall, there is a pressing need to implement more participatory approaches and increasing the level of information, providing local actors with the means and incentives to participate in the management of PAs (Dimitrakopoulos et al., 2010; Apostolopoulou and Pantis 2009, 2010). Finally, it is necessary to reduce the spatial mismatches evident in the fact that, in many cases, the boundaries of the PAs have been based on ownership, administrative divisions, economic activities, or residential development. This tactic has produced mixed results: in some cases important areas are excluded (e.g. building permits inside Dadia National Park, Imittos National Forest, National Marine Park of Zakynthos) whereas in other cases entire villages have been included in the PA (e.g. Kato Souli in Schinias National Park).

4.6. Future trends

Currently, the new regulations in the context of the Memorandum (see also sections 3.2. and 4.1.) are having a strong adverse effect on the national environmental (and conservation) policy. Even though the analysis of the impacts of the economic crisis in conservation policy and governance are not part of this report it should be noted that the crisis has accelerated *a neoliberal turn* (see Büscher et al., 2012 for a discussion on neoliberal conservation) in Greek conservation evidenced in extensive privatizations, deregulation and market-friendly reregulation of environmental policy, marketization of natural ecosystems (see Castree 2008a, 2008b for an analysis of the neoliberalization of nature) and a fundamental rescaling of biodiversity governance. These include, inter alia, major reductions in the staff of environmental administration, decrease in conservation funds, simplification of environmental permitting, emphasis on large investments without consideration of the environmental consequences, post-facto legalisation of illegal developments in PAs, sale of public lands, dismantling of environmental governance institutions and support for dirty energy sources, including coal[7] (see also the footnote in page 24).

7 See also http://wwf.panda.org/wwf_news/?203071/Environment-jeopardised-by-economic-bail-out-plans-warns-WWF.

5. Key empirical findings regarding scale challenges of biodiversity governance in Greece

In this chapter we present our key findings concerning *scale challenges of biodiversity conservation* by drawing on evidence from eight focus groups of stakeholders and scientists from Greece and Finland (described in sub-section 2.1.).

By following a systematic frame analysis we found three dominant frames (for a detailed analysis of these three frames see Apostolopoulou and Paloniemi, 2012). First, framing scale challenges as mainly derived from knowledge gaps regarding ecological scale emphasizes the scale problems occurring when only limited consideration is given to the scale-dependence of ecological phenomena. This prioritizes the formulation of scientifically informed conservation policies, discounting the importance of governance by concentrating on specialized environmental administrations. Second, framing scale challenges as stemming from limited fit highlights the scale problems caused by discrepancies in the alignment of natural and social scales and underlines the need to optimize the match between ecological and governance levels with more or less fixed boundaries. Third, framing scale challenges as primarily derived from inequalities in existing power relationships and learning processes emphasizes scale problems resulting when the dominant perception of scale is seen as a neutral, technical issue. This calls for investigations focused explicitly on how conservation scaling contributes to the production of new social-ecological entities in space and time. Dialogues between aspects of the different frames offer a potential path toward deliberative learning aimed at resolving current contradictions in the spatial patterning of human-environment interactions produced by biodiversity conservation.

It has to be noted that the concept of scale when perceived in interdisciplinary terms (see Apostolopoulou and Paloniemi, 2012; Cash et al., 2006; Gibson et al., 2000; Sayre, 2005, 2008) can be crucial in explaining our human and non-human world. The latter requires more than just inter-disciplinary teams working together, but rather “inter-disciplinary people” (Adams, 2007) as well as an acknowledgment of the dialectic interrelationship between ecological and governance scales (Apostolopoulou and Paloniemi, 2012). Towards this direction it is crucial to acknowledge the complex dialectic interrelationship between the material outcome of scales and the way that scales are socially constructed (for an in-depth discussion see Apostolopoulou and Paloniemi, 2012).

6. Conclusion

In this study we have explored the developments of the Greek regulatory regime of nature conservation by focusing mainly on PAs, the main policy instrument adopted in Greece to deal with drivers causing biodiversity loss. We have presented the main governance challenges during the last 20 years and those of today.

Our empirical and desk study analysis revealed that the key problems in Greek nature conservation relate not only to the limited cooperation or conflict-oriented interplay between different administrative and governance levels, but mainly to the inherent *contradictions* of conservation policy in the era of neoliberal capitalism. The adoption of the Habitats directive in Greece has been accompanied by a significant rescaling of biodiversity governance and a parallel shift towards the neoliberalization of nature conservation. The latter has been further intensified in the period following the financial "crash" of 2008 (see Apostolopoulou et al., under review; Apostolopoulou and Adams, in press).

Overall, the secondary status of conservation policy compared with development policies, the anti-environmental inclination of the Greek economy, the absence of specific measures and strategies towards integrated conservation, the conflicting agendas between different laws, policies and institutions, the belief that the market can provide solutions to biodiversity loss, and the support for private property rights, together with many other related drivers are seriously obstructing the emergence of conservation policies able to deal with scale-related challenges and promote social-environmental justice.

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APPENDICES

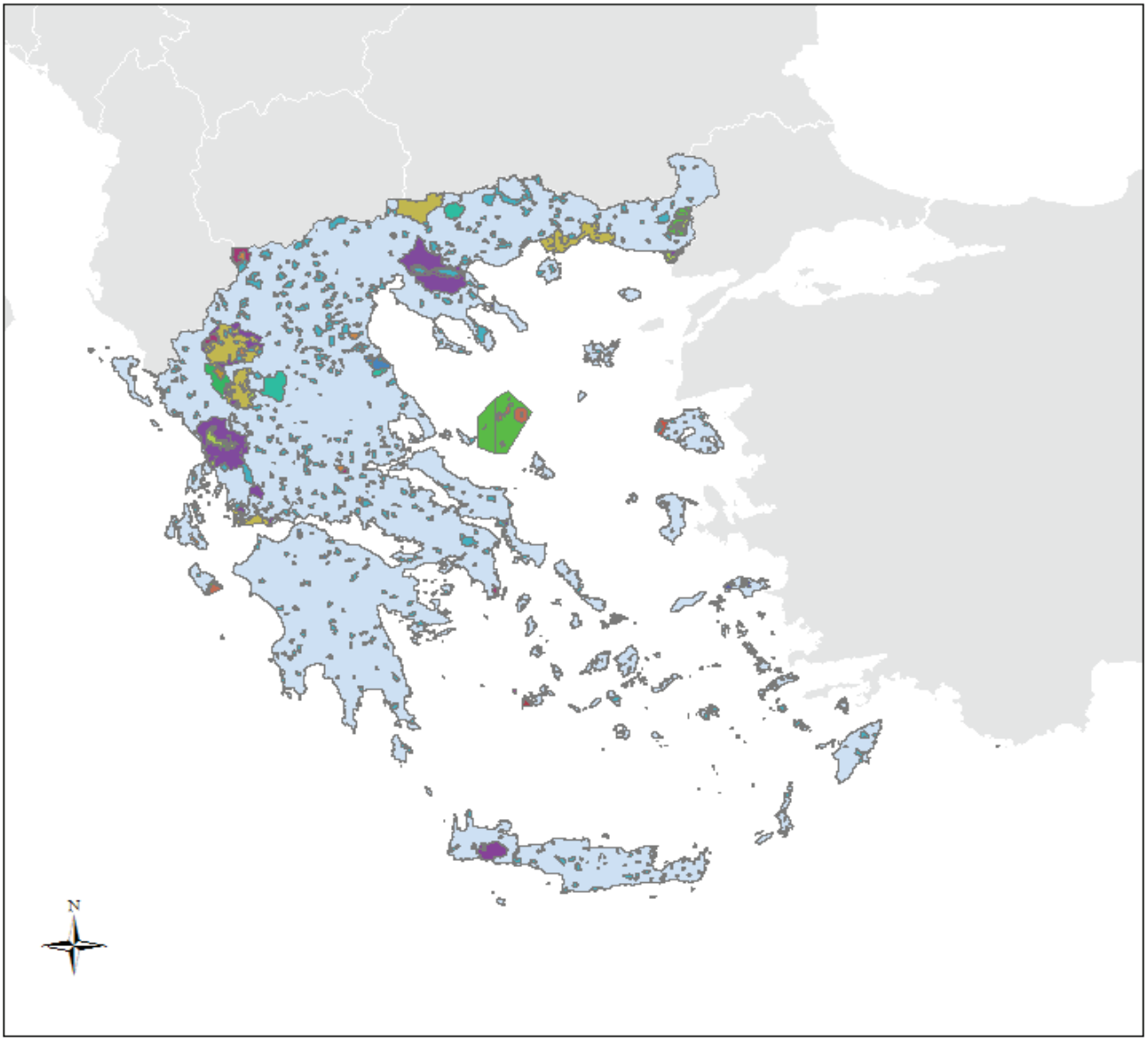
Appendix 1. Forest ownership in EU, EFTA and candidate countries. (Source: SoEF, 2011).

Table 1.2: Forest ownership in the EU, EFTA and candidate countries

	Publicly owned		Private and other		Change 2000-2010			
	2000	2010	2000	2010	Pub. owned	Priv. & other	Pub. owned	Priv. & other
	(1 000 ha)				(1 000 ha/year)		(% annual average)	
Belgium	290	301	377	377	1.1	0.0	0.4	0.0
Bulgaria	3 041	3 408	334	519	36.8	18.4	1.1	4.5
Czech Republic	2 023	2 041	614	616	1.8	0.2	0.1	0.0
Denmark	138	139	348	448	0.1	10.0	0.1	2.6
Germany	5 846	5 708	5 230	5 368	-13.8	13.8	-0.2	0.3
Estonia	899	858	1 344	1 345	-4.1	0.1	-0.5	0.0
Ireland	399	400	236	337	0.1	10.1	0.0	3.6
Greece (1)	2 790	2 907	811	845	23.4	6.8	0.8	0.8
Spain	4 988	5 336	12 000	12 838	34.8	83.7	0.7	0.7
France	3 984	4 113	11 369	11 841	12.9	47.2	0.3	0.4
Italy	2 811	3 073	5 558	6 076	26.2	51.8	0.9	0.9
Cyprus	118	119	54	54	0.1	0.0	0.1	0.0
Latvia	1 749	1 655	1 493	1 696	-9.4	20.3	-0.6	1.3
Lithuania	1 562	1 366	458	784	-19.6	32.6	-1.3	5.5
Luxembourg	41	41	46	46	0.0	0.0	0.0	0.0
Hungary	1 155	1 178	753	861	2.4	10.9	0.2	1.4
Malta	0	0	0	0	-	-	-	-
Netherlands	184	184	176	181	0.0	0.5	0.0	0.3
Austria	928	858	2 332	2 482	-7.0	15.0	-0.8	0.6
Poland	7 535	7 661	1 524	1 658	12.6	13.4	0.2	0.8
Portugal (1)	54	54	3 366	3 382	0.1	3.2	0.1	0.1
Romania (2)	6 010	4 398	356	2 097	-161.2	174.1	-3.1	19.4
Slovenia	365	291	868	962	-7.4	9.4	-2.2	1.0
Slovakia	1 006	980	915	958	-2.6	4.3	-0.3	0.5
Finland	7 213	6 699	15 245	15 389	-51.4	14.4	-0.7	0.1
Sweden (3)	7 522	7 664	20 990	20 941	28.4	-9.8	0.4	0.0
United Kingdom	1 011	959	1 782	1 922	-5.2	14.0	-0.5	0.8
Iceland	7	8	12	22	0.2	1.0	2.3	6.2
Liechtenstein	6	6	1	1	0.0	0.0	0.0	0.0
Norway	1 299	1 450	8 002	8 800	15.1	79.8	1.1	1.0
Switzerland (3)	885	889	:	:	0.8	:	0.1	:
Montenegro	337	337	130	130	0.0	0.0	0.0	0.0
Croatia	1 398	1 396	487	524	-0.2	3.7	0.0	0.7
FYR of Macedonia (1)	864	881	94	94	3.4	0.0	0.4	0.0
Turkey (1)	10 131	10 730	15	10	119.7	-1.0	1.2	-7.4

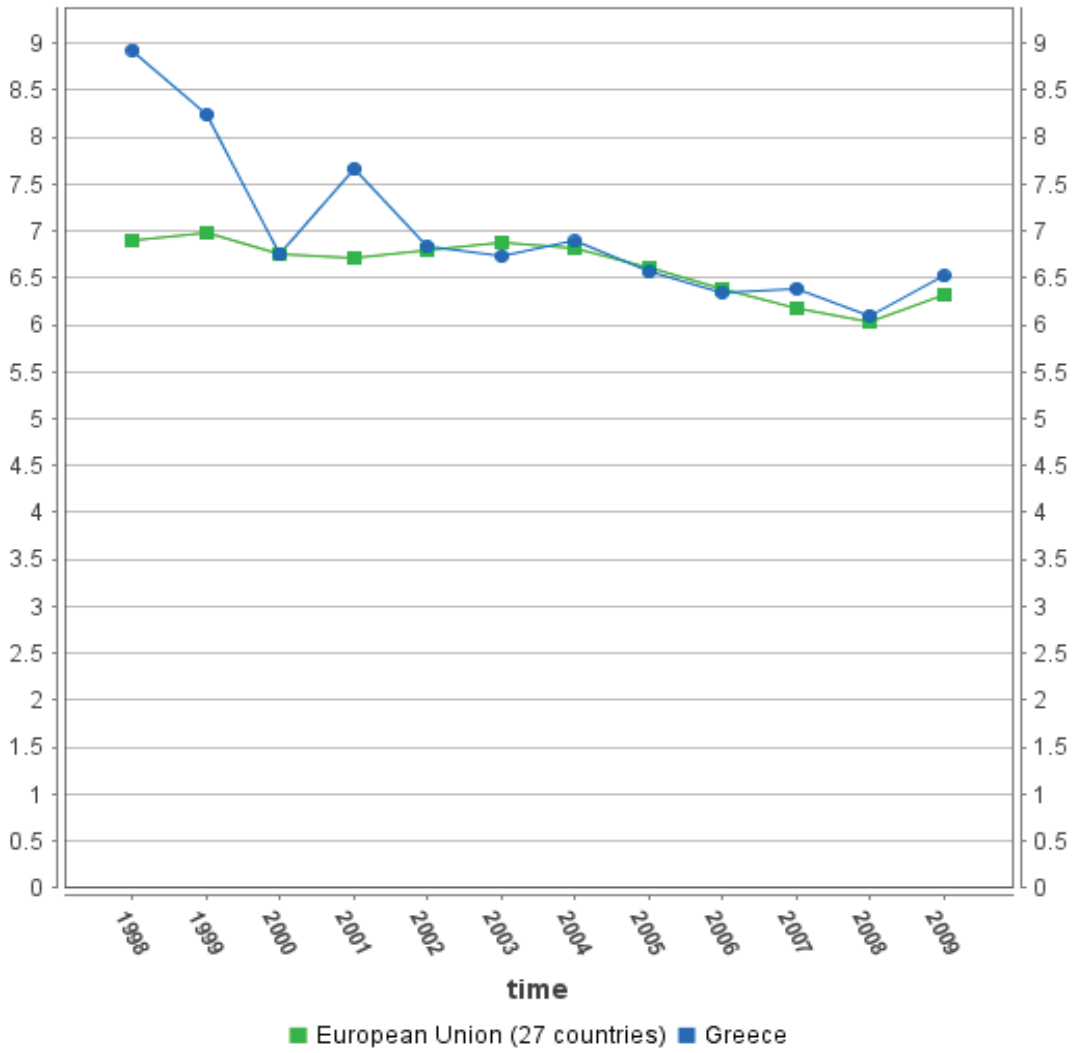
(1) 2005 instead of 2010, change from 2000 to 2005 instead of from 2000 to 2010.
(2) Excluding other ownership.
(3) 2005 instead of 2000, change from 2005 to 2010 instead of from 2000 to 2010.

Source: SoEF2011

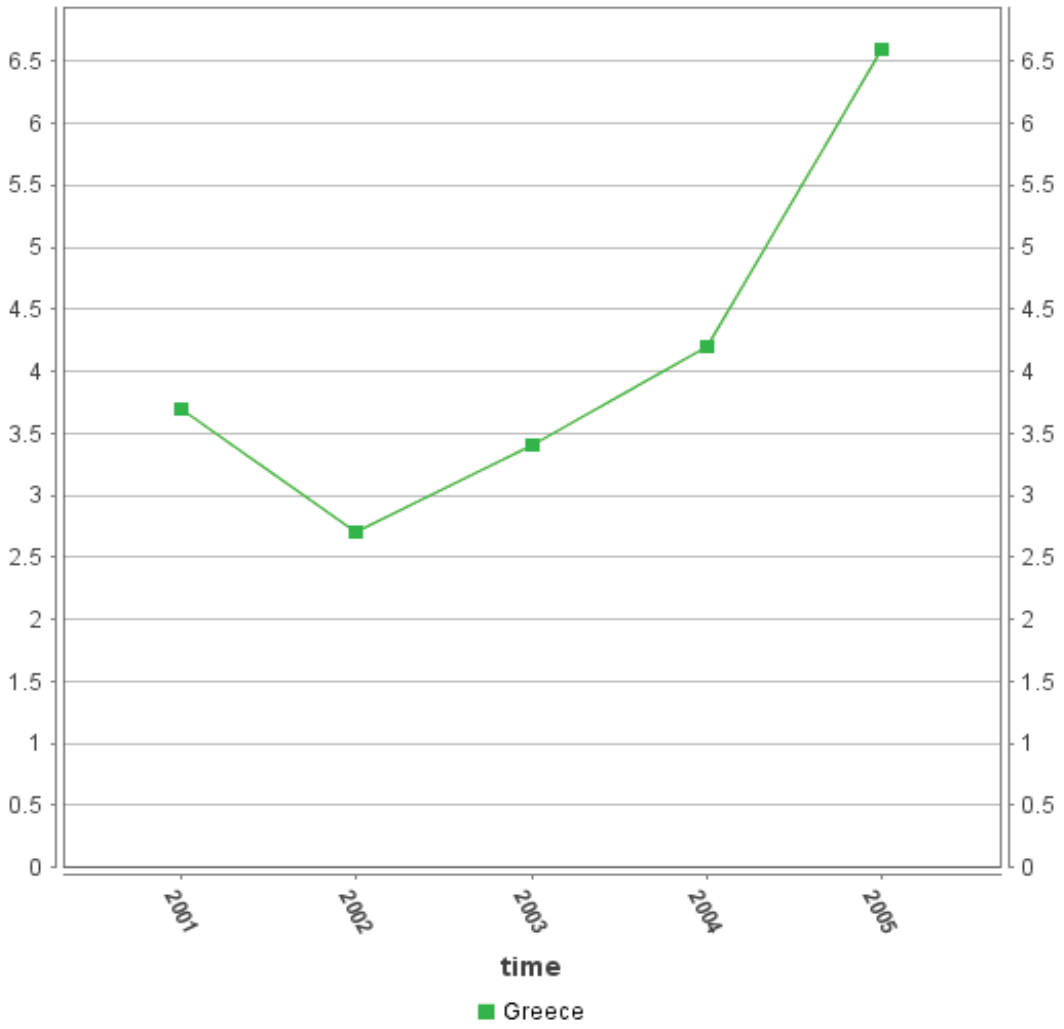


Appendix 2. Nationally designated PAs in Greece (including 24 different categories of Greek National PAs). Data from CDDA v9 database (http://www.eea.europa.eu/data-and-maps/data/nationally-designated-areas-national-cdda-5).

Appendix 3. Funds



a. Total environmental tax revenues as a share of total revenues from taxes and social contributions. Source: EUROSTAT, http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=ten00065&plugin=1.



b. Trends in agricultural land enrolled in agri-environmental measures (AEM) as the share of total utilised agricultural area (UAA). Source: EUROSTAT, http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsdpc430&plugin=1.